THE LITERARY GAZETTE

AND

Journal of the Belles Lettres, Science, and Art.

No. 1966. LONDON, SATURDAY, SEPTEMBER 23, 1854. *Price* **Fourpence.** *Stamped Edition, Fivepence.*

NEW WORKS.

I.

MR. SCOTT'S NEW WORK ON

THE CRIMEA.—SEBASTOPOL, THE CRIMEA, AND CRONSTADT. Comprising Travels through Russia, with a Voyage down the Volga to Astrachan, and a Tour through Crim Tartary. By CHARLES HENRY SCOTT. Post 8vo, neatly bound, 7s. 6d.

II.

THE LIFE AND CORRESPOND-

ENCE of LORD METCALFE, late Governor-General of India, Governor of Jamaica, and Governor-General of Canada. From Unpublished Letters and Journals preserved by his Lordship, his Family, and his Friends. By JOHN WILLIAM KAYE, Author of "The History of the War in Afghanistan." 2 vols. 8vo, 36s.

"We know of few works better deserving to be studied by the civil and military members of the public service."—*Athenæum.*

III.

HISTORY OF THE REIGNS OF

LOUIS XVIII. and CHARLES X. By EYRE EVANS CROWE, Author of "The History of France." 2 vols. 8vo, 28s.

"Notwithstanding the prior appearance of Lamartine's 'History of the Restoration,' and Alison's 'Europe since the Battle of Waterloo,' Mr. Crowe's work may take its place as the most useful and best of the three."—*Spectator.*

IV.

NARRATIVES of PASSAGES in

the GREAT WAR with FRANCE, from 1799—1810. By Lieut.-General SIR HENRY BUNBURY, K.C.B., formerly Quartermaster-General to the Army in the Mediterranean. 8vo, with Maps, 15s.

"A straightforward narrative distinguished by the soldierly characteristics of point and honesty. There are personal sketches of Abercromby, Craig, the Duke of York, Sir Sidney Smith, and General Hutchinson, nor should we omit to mention that many traits may be gathered of one more remarkable than these—Sir John Moore."—*Times.*

V.

DIARY kept during a YEAR'S

JOURNEYING and RESIDENCE in NORTHERN PERSIA and the Adjacent Provinces of TURKEY. By Lieut.-Col. STUART, 13th Light Infantry. 8vo, 12s.

"Will repay an attentive perusal. It displays considerable descriptive power, and its sketches of manner and character are lively and amusing."—*Morning Post.*

VI.

ENGLAND AND RUSSIA; THE

INTEREST OF THEIR COMMERCIAL INTERCOURSE. By DR. HAMEL. 8vo, 14s.

"This remarkable book is the production of a learned Russian. As a record of facts it is very valuable; it will remain a mine of treasure for the antiquarian, and a monument to all of ingenious and toilsome investigation."—*Guardian.*

VII.

THE SIXTH EDITION OF PRO-

FESSOR CREASY'S FIFTEEN DECISIVE BATTLES of the WORLD, from MARATHON to WATERLOO. 8vo, with Plans, 15s.

VIII.

HISTORY OF THE PAPACY,

from the EARLIEST PERIOD to the REFORMATION. By the Rev. J. E. RIDDLE, Author of "The Latin and English Dictionary," "The Bampton Lectures," &c. 2 vols. 8vo, 24s.

"We know not of any work where the reader has the facts necessary to form an opinion upon the formation and growth of the Papacy as clearly set before him."—*Spectator.*

IX.

The Second Edition of LLOYD'S

SCANDINAVIAN ADVENTURES, during a Residence of upwards of Twenty Years. 2 vols. royal 8vo, with upwards of 100 Pictorial Illustrations. 42s.

"Mr. Lloyd is the Gordon Cumming of the Norwegian Wilds."—*Gentleman's Magazine.*

X.

LAMARTINE'S MEMOIRS OF

CELEBRATED CHARACTERS. Second Edition, 2 vols. 8vo, 28s.

"Displays even more than the author's accustomed loftiness of thought, animation of description and narrative, and felicity of style."—*Press.*

RICHARD BENTLEY, New Burlington Street,
Publisher in Ordinary to Her Majesty.

NEW PUBLICATIONS

PRINTED FOR

WALTON AND MABERLY,

28, UPPER GOWER STREET, & 27, IVY LANE, PATERNOSTER ROW.

THE LONDON QUARTERLY REVIEW.

No. V., Oct. 1, price 6s., will contain—

I. Theodore Parker and the Modern Deists.
II. Life in Abyssinia.
III. American School of Ethnology.
IV. Jerome Cardan.
V. Methodist Episcopal Church of America.
VI. New Educational Measure for India.
VII. Recent Roman History—Farini.
VIII. The Danes and Northmen in Britain.
IX. The Crystal Palace.
Brief Literary Notices.

ELECTRIC TELEGRAPH.

By DR. LARDNER.

A Series of Popular Tracts on the Electric Telegraph is now in course of Publication in "Lardner's Museum of Science and Art." The Tracts will embrace an account of the Telegraph from its invention to the present time, clearly describing the different instruments and their modes of working. The Series will also contain full accounts of the English and Foreign Lines of Telegraph, of the Submarine Cables, Tariffs, &c. &c., and will be illustrated by very numerous Engravings on Wood. Price of each Number ONE PENNY.

LARDNER'S MUSEUM OF SCIENCE AND ART.

Already Published.

VOLUME I., price 1s. 6d., in handsome boards.

PART I., price 5d.
1. The Planets: Are they Inhabited Globes?
2. Weather Prognostics.
3. The Planets. Chap. II.
4. Popular Fallacies in Questions of Physical Science.

PART II., price 5d.
5. Latitudes and Longitudes.
6. The Planets. Chap. III.
7. Lunar Influences.
8. Meteoric Stones and Shooting Stars. Chap. I.

PART III., price 6d.
9. Railway Accidents. Chap. I.
10. The Planets. Chap. IV.
11. Meteoric Stones and Shooting Stars. Chap. II.
12. Railway Accidents. Chap. II.
13. Light.

VOLUME II., price 1s. 6d., in handsome boards.

PART IV., price 5d.
14. Common Things. Air.
15. Locomotion in United States. Chap. I.
16. Cometary Influences. Chap. I.
17. Locomotion in the United States. Chap. II.
18. Common Things. Water.
19. The Potter's Art. Chap. I.
20. Locomotion in the United States. Chap III.
21. The Potter's Art. Chap. II.

PART VI., price 6d.
22. Common Things. Fire.
23. The Potter's Art. Chap III.
24. Cometary Influences. Chap. II.
25. The Potter's Art. Chap. IV.
26. The Potter's Art. Chap. V.

PART V., price 5d.

VOLUME III., price 1s. 6d., in handsome boards.

PART VII., price 5d.
27. Locomotion and Transport, their Influence and Progress. Chap. I.
28. The Moon.
29. Common Things. The Earth.
30. Locomotion and Transport, their Influence and Progress. Chap. II.

PART VIII., price 5d.
31. Electric Telegraph. Chap. I.
32. Terrestrial Heat. Chap. I.
33. Electric Telegraph. Chap. II.
34. The Sun.

PART IX., price 6d.
35. Electric Telegraph. Chap. III.
36. Terrestrial Heat. Chap. II.
37. Electric Telegraph.
Chap. IV.
38. " " Chap. V.
39. " " Chap. VI.

PART X., price 5d., (Commencing Vol. IV.,) Oct. 1, will contain—
40. Earthquakes and Volcanos.
41. Electric Telegraph.
Chap. VII.
42. " " Chap. VIII.
43. " " Chap. IX.

**** The Work is continued in Weekly Numbers at 1d., Monthly Parts at 5d., and Quarterly Volumes at 1s. 6d.

ILLUSTRATED HISTORY OF ROME—COMPANION TO SMITH'S HISTORY OF GREECE.

With 100 Illustrations on Wood, a New Edition, 7s. 6d., cloth, of

A HISTORY OF ROME;

FROM THE EARLIEST TIMES TO THE DEATH OF COMMODUS, A.D. 192.

By DR. L. SCHMITZ,

Rector of the High School of Edinburgh, Editor of 'Niebuhr's Lectures."

"It will undoubtedly take the place of every other text-book of the kind, in our schools and colleges."—AMERICAN BIBLIOTHECA SACRA.

**** Messrs. Walton and Maberly's Catalogue will be sent by post (free) to any one writing for it.

London: WALTON and MABERLY, Upper Gower Street, and Ivy Lane, Paternoster Row. And sold by all Booksellers.

NEW EDITIONS & RECENT WORKS.

I.

PRESCOTT'S HISTORY of the

REIGN of FERDINAND and ISABELLA. People's Edition, Crown 8vo, 5s. Also in 3 vols. crown 8vo, with Plates, 10s. 6d. Library Edition, 2 vols. 8vo, with Plates, 21s.

II.

PRESCOTT'S HISTORY of the

CONQUEST of MEXICO. People's Edition, Crown 8vo, 5s. Also in 3 vols. crown 8vo, with Plates, 10s. 6d. Library Edition, 2 vols. 8vo, with Plates, 21s.

III.

PRESCOTT'S HISTORY of the

CONQUEST of PERU. People's Edition, Crown 8vo, 5s. Also in 3 vols. crown 8vo, with Plates, 10s. 6d. Library Edition, in 2 vols. 8vo, with Plates, 21s.

IV.

HISTORY OF OLIVER CROM-

WELL and the ENGLISH COMMONWEALTH. By M. GUIZOT. Second edition. 2 vols. 8vo, 28s.

"This important work will meet with a hearty and universal welcome."—*Athenæum.*

V.

HISTORY OF THE ENGLISH

REVOLUTION of 1640 to the DEATH of CHARLES I. By M. GUIZOT. Second and Revised Edition, uniform with the above. 2 vols. 8vo, 28s.

"The best history both in thought and composition of the times of Charles the First."—*Athenæum.*

VI.

Part III. of the ONE PRIMEVAL

LANGUAGE. The MONUMENTS of BABYLONIA, ASSYRIA, and PERSIA. With a Key for the Recovery of the Lost Ten Tribes. By the Rev. CHARLES FORSTER, Rector of Stisted.

VII.

M. DE SAULCY'S DISCOVERY

of the SITE of the DESTROYED CITIES of the PLAIN — SODOM and GOMORRAH. 2 vols. 8vo. Second Edition, with Map, 30s.

"A discovery the most striking within the range of biblical antiquity. The disinterment of Nineveh as a matter of feeling is a small matter."—*Guardian.*

"Will achieve a popularity equal to 'Layard's Nineveh.'"—*Morning Post.*

VIII.

LIFE in the MISSION, the CAMP,

and the ZENANA; or, Six Years in India. By Mrs. COLIN MACKENZIE. Second Edition. 2 vols. post 8vo, 21s.

"A fitting companion to the delightful letters of Bishop Heber."—*Athenæum.*

IX.

THE FRONTIER LANDS of the

CHRISTIAN and the TURK. By a British Resident of Twenty Years in the East. Third Edition. 2 vols. 8vo, 28s.

"The best work on the Danubian Principalities."—*Literary Gazette.*

X.

DIARY during a Stay in RUSSIA,

in 1825-26—The LAST DAYS of the EMPEROR ALEXANDER and the FIRST DAYS of the EMPEROR NICHOLAS. By Dr. ROBERT LEE, M.D., F.R.S. Second Edition. Small 8vo, 3s. 6d.

"A valuable diary."—*Athenæum.*

XI.

ANADOL, THE LAST HOME

of the FAITHFUL. By the Author of "The Frontier Lands of the Christian and the Turk." 8vo. 12s.

"Anadol comes in the very nick of time, and offers information eagerly desired, in a manner that leaves little to be wished for."—*Observer.*

XII.

THE SECRET HISTORY OF

the COURT and GOVERNMENT of RUSSIA under the EMPEROR ALEXANDER and the Present CZAR NICHOLAS. By J. H. SCHNITZLER.

"We give more credit to what this author relates, respecting the Russian Empire and its rulers, than to any recent publication."—*Literary Gazette.*

RICHARD BENTLEY, New Burlington Street,
Publisher in Ordinary to Her Majesty.

LONDON, SATURDAY, SEPTEMBER 23, 1854.

REVIEWS.

The Baltic, the Black Sea, and the Crimea. Comprising Travels in Russia, a Voyage down the Volga to Astrachan, and a Tour through Crim Tartary. By Charles Henry Scott. Bentley.

THE books recently published relating to Russia and the scenes of the war, already form no inconsiderable library. Many of these volumes are indeed mere compilations, prepared to meet popular curiosity on subjects of absorbing interest. But the present work is of a higher class, containing the record of personal observation of the regions described, and communicating information both new and important. Mr. Scott travelled in Russia in 1850, before there was any real apprehension of a rupture with England. He kept a journal of things and places seen and visited, and he now publishes it, with additional notes and comments, rightly deeming that an authentic account of scenes to which general attention is directed, will prove widely acceptable. Of the Crimea, Mr. Scott saw more than most travellers who have published a record of their observations in that region, and he had an opportunity of inspecting Sebastopol and its fortifications under circumstances of peculiar advantage. This would alone entitle the volume to general attention at the present time, but the other portions of Mr. Scott's journal contain varied and interesting matter. In company with a Scotch gentleman, Mr. Gordon of Pitlurg, the author commenced his Russian trip by sailing from Stockholm to Abo, in July, 1850. The Aland Islands, Bomarsund, Abo, Helsingfors, Sweaborg, Revel, Cronstadt, Petersburg, Moscow, Nijni Novgorod, were successively visited. All these places have been frequently described by travellers from western Europe. But at Nijni Novgorod the author left the beaten path of tourists, and undertook a voyage down the Volga to Astrachan and the Caspian Sea. This is perhaps the first English book of travels in which a visit to Astrachan is recorded, and the description of the Don Cossack and Noguai Tartar districts is also marked by novelty, these regions being rarely traversed by Europeans. The voyage down the Volga was made in a boat, forty-five feet long, and eight feet at the greatest breadth, purchased at Nijni Novgorod for the occasion, manned by twelve Russians, who turned out a faithful and suitable crew, though an unpleasant scene took place at first starting. André, a Russian from Moscow, accompanied the tourists as servant and interpreter:—

"Our German acquaintances and others, whose lengthened experience of Russian workmen, and the faithlessness of Russian promises, entitled their opinions to respect, assured us that we should be disappointed if we expected to get off on the day we desired. It was therefore with some feelings of triumph on the appointed evening of the 15th that we stepped on board the craft which was to carry us two thousand miles down the mighty Volga.

"On drawing up the agreement it was necessary to mention the names of all the men engaged for the voyage; and their passports, which we received, being rather bulky, were handed over to the keeping of André. On mustering the crew one was discovered to be absent, and on further investigation we found that the missing individual was no other than the principal steersman, who was, in fact, the most responsible and important personage of the whole.

"On making inquiries we learned that he had abandoned his intention, if he ever had any, of accompanying us. Having succeeded by trickery and deception in obtaining his passport from André, he now stood in the next boat to see us off, wishing us no doubt a prosperous passage, and perfectly content with the amount of profit he had made out of the affair. The feeling of having been duped is never agreeable, but in this case the presence of the deceiver added insult to injury; and to be thus coolly treated with impunity before a crew of whose character we were ignorant, might, and in all probability would, have led to subsequent annoyance.

"No time, therefore, was left for parleying; so I sprang suddenly to the place where the delinquent was standing, caught him by the throat, and dragging him into the boat, ordered the crew to push off, and thus fairly took my man prisoner.

"Enraged at having been so summarily dealt with, he was inclined to be violent, and showered forth volleys of oaths and maledictions, of the nature of which we were then in blissful ignorance. His gesture and voice, however, were sufficient to prove, that neither the soft tones of civility, nor the gentle notes of persuasion, were flowing from his lips; and thinking a further demonstration of firmness necessary, I stepped into the cabin, and drew forth a strong chain, which had been purchased for a very different purpose. The effect was magical; the ominous sound of the jingling links had reached his ear, and ere its size or strength could be seen, he was stretched, a prostrate slave, kissing my feet; and, in abject terms, imploring pardon, while but an instant before he had loudly threatened revenge.

"Thus far all was well: a beneficial effect had been produced on the crew, and to a certain extent our feelings of indignation had been appeased. We had at first determined to take him to Astrachan *nolens volens*, but a very little reflection led us to change this plan, as by it we should certainly have inflicted more trouble on ourselves than punishment on him; for in this case the gaoler's position would have been more perplexing than the prisoner's. So the bright idea of inflicting a fine having occurred, we ascertained the amount required to hire another pilot in his place, which sum he gladly paid, and being put on shore some versts from Nijni, he had time in the solitary walk to reflect on his dishonesty; and we had the consolation of hoping that the lesson was not entirely lost on him. Thus terminated our first adventure on the Volga.

"As two of the gentlemen who had accompanied us from Moscow to Nijni had decided on a trip to Kazan, we offered them a passage to that place; and as they were too good travellers to be influenced by trifles, they accepted our invitation, and submitted with cheerfulness to the inconveniences necessarily existing in the sleeping department of the boat, fitted for two, when that number was doubled.

"Calling our combined ingenuity into play, we contrived, by placing boards on a level with the opposite benches of the cabin, to make one large berth, into which we crept, through the upper half of the narrow door, and lay, like soldiers on a bivouac, with our martial cloaks, viz., mackintoshes, wrapped around us.

"Early on the morning of the 16th, we stopped at the small village of Rebatki, about fifty versts below Nijni, where the passports were examined. The morning was beautiful, and the air exhilarating: the broad stream lay stretched before us, silently carrying its ceaseless flood towards that sea which is ever receiving the swelling waters by countless channels, but giving them off by none.

"Now, for the first time, we examined with attention the appearance of our crew; and a wild piratical-looking set the majority of them were. Bushy whiskers, beards, and moustaches, almost concealed their grim visages, while the hair, worn long, was cut with mathematical precision, in a line with the chin. On their heads were caps of fur or sheep-skin; a shirt and a pair of trousers of cotton, with the bottoms of the latter confined by coarse bandages, in the place of stockings; and the feet encased in *laptyi*, a kind of shoe, made of matting. A large sheep-skin coat, used at night or in cold weather, in addition to these, constituted their entire wardrobe.

"There was no great expenditure of time in preparing their breakfast. A large wooden bowl being dipped into the river, some jet-black bread, broken into pieces, was thrown into the water it contained, and a little salt having been sprinkled over, each in turn helped himself, with a wooden spoon, to a morsel of the contents. Scanty as was this repast, they did not forget to cross themselves, and bow many times, while uttering a short prayer or thanksgiving before commencing the frugal meal, concluding it also with the same ceremony. Their dinner and supper consisted of the like simple fare, and was only occasionally varied, by eating the bread and salt dry, and sipping the water alone with their spoons, each adhering to his turn with the same regularity. When we afterwards gave them apples and cucumbers, of which the lower orders in Russia are all passionately fond, they quite luxuriated, enjoying the treat much more than any alderman ever did the greenest fat of the most corpulent turtle.

"As both stem and stern of our boat were pointed, a square sort of stage was built at each end; which, projecting over the gunwales, considerably increased the accommodation, and in the bows formed the sleeping-place of half the men, while the other half were rowing. That over the stern was a convenient place for the pilot. On it also André established his kitchen, and subsequently when we took to purchasing live stock, a poultry-yard. Beneath it was a space of which we made an ice-house, ice being a luxury everywhere found in abundance on the Volga."

We pass over the brief accounts of Kazan, Volsk, Saratov, Rovno, and other places of greater or less note, at which the travellers disembarked, but we must give a paragraph in which the author records his general impressions of the voyage down the Volga:—

"The Russian loves his beautiful Volga; he sings her charms in his popular songs; he speaks of her with rapture; and this is not surprising, for independent of the beauty inseparable from a fine river, there are a thousand changing scenes to call forth admiration. For ourselves, the hours flew too quickly by; fresh objects of interest constantly arose; strolling along the river's bank, sometimes amidst shrubs and sweet-scented wild flowers, filling the atmosphere with a perfume more refined and delicate than I had ever before experienced; now meeting a body of sixty or seventy men towing a large vessel, and stepping in time to the measured tune of a monotonous song, occasionally reaching us from so great a distance, and by fitful snatches, that it seemed like some magic music in the air. Visiting villages, mingling with the people, entering their houses to make real or pretended purchases:—now watching the solitary fisherman, or enjoying the refreshing bath;—one day in Europe, and the next in Asia; exploring the large towns, strolling through their bazaars, examining their buildings, and studying the varied costumes of the divers races moving but not mixing together:—now mounting a hill-top, and embracing in one gaze scenes more extensive than any other part of Europe can produce, and now reclining in our boat, and revelling in the pleasures of ever-changing always beautiful landscapes.

"Thus passed our days; and the evenings were not less attractive. Lighted up by a brilliant moon, which sometimes catching the rosy-tinted rays of the sun already departed from our view, appeared red and full, but soon changed to her own pale complexion, and shed over the surrounding scenery a clear pure light which varied, but did not lessen, its loveliness,—our boatmen sang their wildest airs of brigandage, or poured forth softer strains in praises of their beloved Volga. There was about these chorus-songs at such hours something peculiarly exciting. Their time was admirable, and the harmony indicated a just ear;

the key was generally high, but being in the open air, that rather increased than diminished the spirit-stirring effect."

At length Astrachan was safely reached, not without discomforts during the voyage, which somewhat counterbalanced the pleasure so glowingly described in the foregoing extract. However these are forgotton, and the author having recovered from a fever which laid him up for a time, explores the town and neighbourhood of Astrachan:—

"Astrachan, the last town upon the mighty Volga, before it loses itself in the Caspian Sea, is situated upon a sandy island. It is now merely the capital of a province of the same name, though once that of a Tartar kingdom, and some old walls and towers of its proud period still exist. Within the Kremlin stand the two principal churches, viz., those of the 'Assumption' and 'Saint Trinity,' together with large barracks, military hospitals, and other buildings. In the town are many other churches, and amongst them a fine Armenian one, together with some mosques, the governor's palace, a theatre, and a hospital for the poor, built by a Russian of enormous wealth, who, in a time of scarcity, had bought up all the corn and resold it at an exorbitant profit; for this act he was banished from the town, but his wealth enabled him to get removed to Volsk, which most people would regard as a change for the better. This hospital was raised as a little expiation for the sin, and a slight acknowledgment to that class of people of whom he had starved so many to death.

"The streets of Astrachan have no pavement of any kind, being composed of deep sand, which, when there is any wind, and that is very often, rises in one dense blinding cloud of dust. Most of the houses have shops, all of which have a dilapidated appearance, from the falling of numerous patches of stucco.

"The population is between forty and fifty thousand, and being composed of Russians, Armenians, Greeks, Kalmucs and divers other Eastern races, presented a more Oriental appearance than in any other town of Russia we had hitherto visited. All these people, excepting the military and officials, are engaged in trade, and on our arrival excited some curiosity to know what line of business we were in. André found it quite useless to assure his questioners that our only object was to see the place; for the fact of his denying that we had anything to do with commercial affairs, drove them to the conclusion that we had come upon a secret speculation to buy up some particular commodity or production.

"The costumes of the inhabitants were as varied as the races, and these gave character and life to the place; otherwise, with its green-domed churches and tall belfries, it was much like an indifferent Russian town.

"The fisheries of Astrachan are on a very extensive scale, and the exports from this source alone considerable. The first part of the fish secured is the spawn, which is taken from it immediately after being caught, thrown into a saturated solution of salt, and thence transferred into bags, through which the superfluous moisture is pressed. Thus prepared it is known in commerce as *caviare*. The Russians are very fond of it, and in the houses of the rich take it, amongst other things supposed to create an appetite, before dinner with brandy or liqueur. The fish, after the spawn is removed, is salted and dried; and much glue is also made.

"Silk is still raised, but not nearly to the same extent as formerly, the capital having been withdrawn and invested in the fisheries, which are much more profitable. There are numerous gardens and vineyards near the town, and various fruits are grown; the grapes are good, but the wine is of indifferent flavour. Each of the gardens is enclosed, and has in its centre a high stage, on which a boy is to be seen rushing about all day long to frighten away the birds.

"We had an interview with the governor, a fine old general officer. He could speak neither French nor English, an unusual circumstance, but his daughter became our interpreter. He was kind and polite in manner, and, what was of more importance, gave us an order to the postmasters of his district, to furnish us with horses without delay, which we afterwards found of great service. * *

"We also paid the chief of police a visit, who insisted on our taking luncheon, and produced some wines of the country for us to taste. He was a short fat man, a colonel in the army, had been in the campaigns of 1814 and 1815, about which he was fond of talking. He was full of jokes, in the midst of which it was quite evident he had an eye to business; for with all his tact it was not difficult to discover that he desired to get as much information as possible concerning our object in visiting Astrachan, and our intended future movements, in which we fully gratified him, for we had nothing to conceal. It was quite clear from this and other circumstances we have already mentioned that Astrachan is far removed from the beat of tourists, who are there looked upon as belonging to a singular and rare variety of the human species."

We must forbear from quoting further from other parts of Mr. Scott's journal, in order to leave as much space as possible for extracts from his description of Sebastopol:—

"The port of Sevastopol consists of a bay running in a south-easterly direction about four miles long, and a mile wide at the entrance, diminishing to four hundred yards at the end, where the 'Tchernaia Retchka,' or Black River, empties itself. The average depth is about eight fathoms, the bottom being composed of mud in the centre, and gravel at the sides. On the southern coast of this bay are the commercial, military, and careening harbours; the quarantine harbour being outside the entrance. All these taking a southerly direction and having deep water.

"The military harbour is the largest, being about a mile-and-a-half long, by four hundred yards wide, and is completely land-locked on every side. Here it is that the Black Sea fleet is moored in the winter; the largest ships being able to lie with all their stores on board close to the quays. The small harbour, which contains the naval arsenal and docks, is on the eastern side of the military harbour, near the entrance.

"The port is defended to the south by six principal batteries and fortresses, each mounting from fifty to a hundred and ninety guns; and the north by four, having from eighteen to a hundred and twenty pieces each; and besides these are many smaller batteries.

"The fortresses are built on the casemate principle, three of them having three tiers of guns, and a fourth two tiers. Fort St. Nicholas is the largest, and mounts about a hundred and ninety guns: on carefully counting them *we* made a hundred and eighty-six. By great interest we obtained permission to enter this fortress. It is built of white limestone: a fine sound stone, which becomes hard and is very durable, the same material being used for all the other forts. Between every two casemates are furnaces for heating shot red hot: we measured the calibre of the guns, and found it to be eight inches, capable of throwing shells or sixty-eight pound solid shot.

"Whether all the guns in the fortress were of the same size, it is impossible to say, but my belief is that most of the fortifications of Sevastopol are heavily armed. We entered Fort St. Nicholas through the elegantly-furnished apartments of the military commandant, situated at its south-western end.

"At the period of our visit there were certainly not more than eight hundred and fifty pieces of artillery defending the port towards the sea, and of these about three hundred and fifty could be concentrated on a ship entering the bay. Other batteries, however, are said to have been since built. We took some trouble to ascertain these facts by counting the guns of the various forts; not always an easy matter where any suspicion of our object might have subjected us to grave inconveniences. Sevastopol is admirably adapted by nature for a strong position towards the sea, and it will be seen from what we have stated above that this has been fully taken advantage of to render it one of the most formidably fortified places in that direction which could be imagined.

"We are well aware that the *casemated* fortresses are very badly constructed, and though having an imposing exterior, that the walls are filled in with rubble. The work was carried on under Russian engineers, whose object was to make as much money as possible out of it. They were, moreover, found to be defective in ventilation, to remedy which some alterations were subsequently made; but admitting all their defects, they are still strong enough to inflict some amount of injury on an attacking fleet before their guns could be silenced. And when that is accomplished, supposing there are now nine hundred and fifty pieces, there would still remain five hundred guns of large calibre, in strong open batteries, half of them throwing shells and red-hot shot, independent of mortars. This is a force of armament against which no fleets have been tried, not only with regard to the number of guns and weight of metal, but the nature of the projectiles; any single shell fired point blank, and striking between wind and water, being sufficient to sink a ship.

"If Sevastopol can be so easily taken by the Allied fleets alone, and without land forces, as some people appear to imagine, it would be very satisfactory to know what amount of resistance it is expected that Portsmouth could offer to an enemy, with her seventy or eighty guns, not above five-and-twenty of which are heavier than thirty-two pounders.

"We do not mean to assert that it is impossible to destroy Sevastopol from the sea alone, but we believe that it could only be accomplished by an unnecessary sacrifice of life and ships with our present means, and that it would be nothing short of madness to attempt it, unless we had a reserve fleet on the spot, sufficiently strong to insure the command of the Black Sea in case of failure."

The foregoing remarks were written before a land attack on Sebastopol was contemplated. Mr. Oliphant, whose description of the place has been much referred to of late, says, "Nothing can be more formidable than Sebastopol from the seaward. We visited it in a steamer, and found that at one point we were commanded by twelve hundred pieces of artillery," on which Mr. Scott remarks:—

"If by this passage it is to be understood that twelve hundred guns mounted on the fortresses and batteries of that place, and commanding the sea, can be concentrated on any one spot, it is manifestly a mistake. That point where the greatest number of pieces of artillery can be concentrated is probably about the centre of a line drawn from Cape Constantine to the eastern promontory of the Quarantine Harbour, on which part of the guns of Fort Constantine, the Quarantine Battery, Fort Alexander, and Fort St. Nicholas, with some from other batteries, may be brought to bear; but these cannot at the utmost amount to more than three hundred and fifty pieces, even allowing that spot to be commanded by a hundred guns of Fort St. Nicholas."

Of the town itself, and of its defences on the land side, some account is given:—

"The town of Sevastopol is situate on the point of land between the commercial and military harbours, which rises gradually from the water's edge to an elevation of two hundred feet. It is more than a mile in length; and its greatest width is about three quarters of a mile, the streets entering the open steppe on the south. It was partly defended on the west, towards the land, by a loop-holed wall, which had been pronounced by one of the first engineers of Russia as perfectly useless; and plans for completely fortifying the place in that direction were said to have been made; but whether the work has since been carried out we know not, though we have a deep conviction that strong defences will be found to exist there by the

time a besieging army arrives. These, however, being hurriedly raised, can neither be of sufficient magnitude nor strength to offer a serious resistance to a long-continued fire of heavy artillery; and unless these fortifications are on a most extensive scale, and embrace a very wide circuit, they may be commanded from so many points, that, attacked with heavy guns of long range, their speedy reduction becomes a matter of certainty.

"None of the sea batteries or forts are of the slightest service for defence on the land side. Indeed the great fort, 'St. Nicholas,' has not a gun pointed in that direction: and such an armament would be perfectly useless if it existed, as that part of the hill on which the town stands, rises behind it to a height of two hundred feet. In fact, all the fortresses and batteries, both to the north and south of the great bay, are commanded by higher ground in the rear."

Then follow some remarks on the neighbouring coast, and the most suitable places for the disembarkation of an invading army. As this point has now been practically determined, it is needless to quote speculations which have lost much of their interest. We only mention that Balaclava, distant ten miles from Sebastopol, is the point which Mr. Scott considers ought first to be secured, especially as there is an admirable harbour for the fleets. The Russian works of defence are strong at Balaclava, and supposing the whole of the batteries defending the harbour to be destroyed, no ships could enter with safety until all the positions on the heights which surround and overhang it had been carried:—

"Another plan for attacking Sevastopol might be adopted by landing, to the north of the bay of Inkerman, destroying or taking Fort Constantine, and the other batteries from the rear, and thence bombarding the naval arsenal, the town and ships; and, indeed, this is the only alternative, if a footing cannot be effected in the Chersonesus.

"The streets are built in parallel lines, from north to south, and intersected by others from east to west; and the houses, being of limestone, have a substantial appearance. The public buildings are fine. The library erected by the Emperor, for the use of naval and military officers, is of Grecian architecture, and is elegantly fitted up internally. The books are principally confined to naval and military subjects, and the sciences connected with them, history and some light reading.

"The club-house is handsome externally, and comfortable within: it contains a large ball-room, which is its most striking feature, and billiard-rooms, which appeared to be the great centres of attraction; but one looked in vain for reading-rooms, filled with newspapers and journals, such as are found in the clubs of England.

"There are many good churches, and a fine landing-place, of stone, from the military harbour, approached, on the side of the town, beneath an architrave supported by high columns. It also boasts an Italian opera-house, the first performance for the season at which took place during our visit; but we cannot say much for the singing: the company being third-rate, and the voice of the 'prima donna' very much resembling, at times, a cracked trumpet. The house itself was badly fitted up.

"The eastern side of the town is so steep that the mast-heads of the ships cannot be seen until one gets close to them. Very beautiful views are obtained from some parts of the place, and it is altogether agreeably situated. A military band plays every Thursday evening in the public gardens, at which time the fashionables assemble in great numbers.

"As Sevastopol is held exclusively as a military and naval position, commerce does not exist. The only articles imported by sea being those required for material of war, or as provisions for the inhabitants of the garrison.

"On the eastern side of the military harbour, opposite to the town, is a line of buildings consisting of barracks, some storehouses, and a large naval hospital, which we inspected. The wards are good, but too much crowded; many of the arrangements are bad, and the ventilation in some parts exceedingly defective, the effluvia being most offensive. But perhaps this is permitted on hygeian principles; seeing that the Russian is so accustomed to foul odours from his birth that the physicians may consider a return to a little artificial native air as highly beneficial after a sea voyage.

"Sevastopol is not the port of construction for ships of war: they are all built at Nicholiev on the River Bug, as Petersburg is the building-place for Cronstadt. But here all repairs are done, and stores and materials of war in great quantity kept in the naval arsenal.

"The works that have been accomplished in the little port appropriated to this department are immense. The quays are well and strongly built of limestone with granite copings, under the superintendence of an English master mason. Along the eastern quay are ten large stone buildings, for storehouses, then in the course of construction, five of which were already finished.

"But all other works sink into insignificance at Sevastopol, before those projected and accomplished by Colonel Upton, under immense engineering difficulties. They consist of a great fitting basin, into which open five dry docks,—three at the end, and one on each side of the entrance canal. As there is no tide, these docks are above the level of the sea, and the ships are floated into them by locks, of which there are three, having a rise of ten feet each.

"To supply the basin, and thence the canal, the water is brought eleven miles by a beautiful aqueduct of stone, into which the Black River has been turned beyond Inkerman. This passes, at one part, through an excavated tunnel nine hundred feet long, which is constructed on arches in five or six other places. * * *

"In order to make sufficient space for the docks, the canal of which leads from the southern extremity of the little port, it was necessary to cut away a portion of the mountain, and on the top of the great perpendicular wall thus made, now stands a massive pile of stone buildings, used as the sailors' winter barracks.

"In case of an enemy penetrating the dockyard port, these barracks might be held as a formidable position by men armed with the Minié rifle; and it has been suggested, that a couple of line-of-battle ships in the basin, with their broadsides to the port, and commanding it, would also form a battery of great power. Thus, in an attack by sea alone on Sevastopol, every inch of ground would have to be contested. * * *

"The streets of Sevastopol, as may be expected, teem with soldiers and sailors; indeed, no one unconnected with the services lives there; and all but Russians are discouraged or forbidden to do so. The Jews were at one time ordered away from it entirely, but some few have been allowed to return. It was said that no foreigners were permitted to remain there more than twenty-four hours; but during a sojourn of ten days we met with no interference, although we visited, and curiously examined, all parts of the town, and everything worth seeing in it."

The great interest at present felt in all that relates to the Crimea and its chief fortress, has induced us to devote considerable space to the notice of this part of Mr. Scott's book. Of Odessa, Simpheropol, Kertch, and other places in the Crimea, descriptions are also given. Apart from the temporary interest arising from passing events, the work is worthy of perusal. The classical scholar will be much pleased with the chapters in which the author records his visit to the country of Mithridates, king of Pontus, and the Cimmerian Bosphorus, with its many historical associations. Both in regard to the Crimea, and the parts of the Russian empire previously traversed, the general reader will find much interesting information, conveyed in a lively and agreeable style.

Matthew Paxton. Edited by the Author of 'John Drayton.' Hurst and Blackett.

In the story of 'Matthew Paxton,' a phase of life and manners is described, which the author says is known to himself by actual experience. The hero of the book is a Presbyterian minister in the wilds of Northumberland; and there are many plain and striking sketches of that country and its people in their social and religious aspects. In its main features, the story has every appearance of being a genuine autobiography, or at least the writer has the advantage of somehow obtaining detailed and authentic knowledge of the way of life of a Scottish border minister. Some parts of the book are bleak and barren, like the region in which the scenes are laid; but we come frequently upon passages of picturesque description and warm interest. Homely and plain, as in the writer's former tales, are the circles of society into which we are introduced; but the majority of readers of fiction will find themselves carried over new and unusual ground:—

"In the wilds of Northumberland, a historic country, crowded with picturesque reminiscences, the home-keeping descendants of those rude Border fighters, immortal in song and ballad, lag a century behind the stirring world about them. It is not that improvement never enters this remote territory, where you may find the refinements of agricultural science side by side with the ancient simplicities of use and wont—nor is it that enterprise or activity are wanting. Like their neighbours over the Tweed, the rustic families of Northumberland send forth many an adventurer who conquers fortune, and are well represented in the front of battle; but, nevertheless, contrive to retain in their own persons, and at home, all that prejudiced and exclusive partiality for their own individual town or parish—all that tenacity of attachment to modes and customs out of date, the usages of their fathers, which gives a primitive and unadvancing aspect to a manly and intelligent race. Their position, too, which communicates to their dialect a strong savour of the Scot, intensified with the burr sacred to themselves, and which impresses upon their forms of religious worship the character peculiar to their neighbour nation, adds to the individuality of the wide rural districts of Northumberland. Presbyterian in creed, and deriving much of his religious instruction from Scotland, your Northumbrian is no Scotchman. The country, indeed, remains still a wide and noble debateable land—a piece of independent territory, hostile to the nationality on one side, and dissenting from the nationality on the other—neither England nor Scotland, but Northumberland—a great, sturdy, healthy, broad-shouldered giant, ringing out his R's like a round of musketry, defying innovation, scorning conformity, and content at all times to be himself, however unlike himself may be to all the rest of the world.

"Add to this that the country is full of primitive, ancient villages, and little market towns, but for the rest is an agricultural country, neither spinning cotton, nor manufacturing iron, but tilling its fields on the low country, and keeping sheep upon its hills—that the people are leisurely rural people for the most part, who have full time for all the gossip of the country side, and that homely plenty abounds in farm-steading and cottage, where the necessaries of life are rude and simple, and where luxury is unknown—and it is easy to perceive how far away from the modern life of cities, from the bustle and clangour of to-day, and the haste with which we tread upon each other's heels, is the existence of those hills and dales, over which, like the clouds and the sunshine, there pass only the broad and all-prevading vicissitudes of life.

"The writer of 'Matthew Paxton,' in choosing for the hero of his story a clergyman—one of the 'ministers' of these primitive seclusions—has taken what one might almost call the authorized spectator of this mode of life—a man neither entirely removed from them, nor yet one of themselves, but standing on a slight eminence, just high enough to observe from, near enough to sympathise; and has here offered to the kindness of his readers, a plain and true picture of the life, in these regions, of a simple-hearted pastor."

Matthew Paxton describes himself as born among the Cheviot Hills, the son of a Northumbrian shepherd. Being lame, he was unfitted for rough labour, and was dedicated to learning and the Church. After being taught at a village school, Matthew went to Glasgow university, of the condition of which seat of learning half a century ago there are some good reminiscences. He then went to complete his theological studies at the Academy connected with Redcross-street Library in London, an ancient foundation dating from the times of the Puritans. In this part of the story there are sundry anachronisms and inconsistencies; and sketches of living personages are introduced in a manner not to be approved, and which it was scarcely worth the writer's while to adopt, when a small section only of his readers could recognise the originals intended to be drawn. Passing from this, however, in the second volume we find the autobiographer narrating his experiences as a preacher and pastor, and many scenes are described with much spirit and feeling. Several passages we have marked, such as the account of the delivery of "the first sermon," the wild revelry of "a border wedding," and the gathering of the volunteers under an alarm of the French having landed —for it was the time when Napoleon had his camp at Boulogne, and threatened an invasion. We quote the account of a Sabbath afternoon's field-preaching, in which the writer's powers of description are favourably displayed. The calamity referred to in the narrative was the drowning of a young girl well known in the neighbourhood:—

"Our place of meeting was the moor, above the village of Kirton, a place where, in the old time, there had been extensive lime-works and coal-pits, and where the ground, far beyond the remembrance of my generation, or that which went before it, had been raised in several places into large mounds of a curious conical form. Some traces also of various old earthen fortifications were to be found in different parts of it; for many armies had traversed its length and breadth, during the old fighting times, and it had been, for certain, the halting-place for a night of an English army, which, after a long and bloody battle next day, defeated a Scottish army, and slew a Scottish king. It was on the side of one of these green mounds that the people assembled. They looked to the west, while I stood at its foot, and was able to see and address nearly a thousand people seated on the green grass before me. From my station at the foot of the mound I could see, at the distance of a few miles, the blue waves of the German Ocean on my left hand; while on my right was a dreary extent of barren moor, shut in by a low range of heights, crowned with heath and furze and black firs, and at the distance of ten miles, but looking in the pure air, as if close at hand, and adjacent to these latter, the lofty summits of Cheviot shut in the view. From the mound itself, a magnificent extent of country was visible, the spire of the village church, and the grey towers of the castle at Kirton; while the smoke ascending in graceful, slender, spiral wreaths, revealed the cottage houses of the village, hidden from direct vision, in the immediate foreground. Beyond was a view of the fertile valley through which the Carr flowed slowly to the sea, with thick woods and ruined strongholds, giving an air of grandeur to the scene. And then, a little farther off, the old Scottish encampment and the battle-field, so fatal to Scotland's chivalry and king; and still farther on, range after range of fertile fields, and wood-clothed heights, until the whole was shut in, some thirty miles off, by the dim range of the Lammermuirs, and to the extreme west, the high strong castle of the Holmes, standing out in bold relief against the sky. Near at hand, the black hills and heights shut in the view to the south, and the dark plantations of firs covering the tops of the low crags, separated between the wild moorland and the fertile cultivated soil. On either side on the moor, at the distance of a mile, thin blue wreaths of smoke ascending through the evening air, revealed two collier villages; but save one solitary house on the moor itself, no other human dwelling was visible near at hand.

"The company assembled was the largest I ever spoke to out of doors in this way, and was composed of colliers, shepherds, hinds, and country tradesmen from all the villages around. One of these collier places had suddenly relapsed, from being a by ordinary strict place in religious matters, fanatical indeed; the leading people were all Baptists—I intend no slight to that excellent body of Christians, be it observed—and some two or three of them preachers; but all at once they had tumbled down, from the high pitch of a fancied spiritual perfection, into the lowest and most grovelling infidelity and atheism of Tom Paine, whose works were extensively read by them. Preaching on the bare moor and under the open sky was, however, such a rare event, that even many of these men had been attracted; and the melancholy cause of the sermon so excited the curiosity of the people, that from all parts for miles around the inhabitants assembled; and a very composed and decent company they formed, too, which, considering the atheism of a great part of them, I rather wondered at.

"Well, I preached there, with great earnestness. I had intended to give them a sermon on the dangerous country vices, which had maddened poor Jenny, and driven her to death; but it struck me when I saw the company, that a continuous laboured discourse would not interest and fix the attention of such an audience, and so I took these words, which had been burnt in upon my mind during the last few months, 'The time is short,' and went on to comment on them, taking care to refer to many other parts of the Scripture, and using the grey tower of the church, hardly visible through the trees, and the barren and fertile country around, and the old battle-fields, the ruined castles, and the old entrenchments, as so many illustrations; and then I referred to the causes of the loss of life among themselves, the dangers incurred in the underground labours of so many of them, the noonday explosion, the nightly pestilence, the sullen overflowing river which so rarely gave up its dead, and the various other casualties, to which all were liable; and lastly, to the personal vices, which endangered life here, and destroyed all hope of it hereafter if persisted in. Here I tried to hold up to public reprobation the glaring vice of the country-side; but the scene that night in the village of Kirton, when the drowned girl was brought home, the misery of the mother and sister fairly overcame me, and I had to pause, for my voice broke, and my eyes filled with tears, so that for a few minutes I could neither see the crowd before me, nor go on. During that interval the quiet evening stillness was broken by no sound save that of sobbing; and as I recovered, I saw that a tempest of mighty emotion had swept across these strong, hardened men, scoffers and professors alike were covering their faces, and I could perceive by their heaving breasts that they were weeping bitterly, while the women more unrestrainedly were crying sore. It was a touching and a grand sight that; but I was too much excited and in earnest then to notice it with more than a moment's glance, and so I hurried on to my conclusion, heaping up all the ideas that came to my mind—and they flowed so fast that I could have preached for hours—and at last ended with a series of warnings and counsels, which still kept the people's attention to the highest point. I don't think now I ever preached better than I did that afternoon; of this I am sure, that few sermons of mine ever made so much noise in the country as that one. All, however, that I was conscious of when I had finished, was, that I had done my duty, and that I was for the time utterly prostrated by fatigue.

"We sung a parting psalm; such singing I never heard before. People with scientific musical knowledge could most likely have discerned many false notes, and much want of harmony perhaps; but it was such singing from the heart as one rarely hears in a lifetime, and then only on occasions as elevating as that. And then I went away home again, sadly tired and worn out, but not ill-pleased that I had had such an opportunity of preaching to the almost lost, even though my voice was broken and harsh for days after."

Throughout the work there are various scenes described, which seem genuine reminiscences of an eye-witness; such as the following account of the passing of the 42nd Regiment, the old "Black Watch," through Berwick, after the war:—

"After this moody, morbid, languid state had continued for some time, and while it was gradually growing stronger upon me, there came word one day that the old 42nd Regiment, returning from Waterloo, or rather from its residence in France as part of the army of occupation, was to pass through Berwick, on its way towards Edinburgh. I do not mind anything which stirred the people of the district so much, and which caused so many from my neighbourhood to go down to that town, save the time a few years back, when the Queen opened the great railway-bridge, which now connects Tweedmouth with Berwick. We all felt a kind of personal interest in that gallant regiment; many of them were Northumbrians, and almost all Presbyterians like ourselves; and then it was a regiment so distinguished through all its history, famous in Egypt, and still more famous at Waterloo, that everybody delighted to do it honour, and I myself joined with the rest of the people, and went down to Berwick to see them enter the town."

A description of the town of Berwick then follows; and the narrative is resumed, commencing with one of the Scotticisms with which the book is replete:—

"I mind well the first glimpse of them we got, was on a hill above Tweedmouth, and there the sight of the waving tartans, and the sun glancing on the barrels of the guns, and the glittering bayonets, raised the enthusiasm of the people to the highest pitch, for the banks of the river both up and down—up, it was very high, and the people had a fine view—were covered with spectators. On that height the officers dressed their ranks, as it is called—so John Ogle told me, and he should know, seeing he was a yeoman—and then with pipes playing and colours flying, they marched steadily down through the suburb and along the bridge. As the van appeared, the people began to cheer, and continued hurraing till all the regiment had passed, so that I thought they must all have lost their voices. I felt much interested in the sight of the bold, strong, gallant men, the survivors of that last bloody day at Waterloo, where they lost so many men, yet never failed nor flinched; but still more when the baggage-carts appeared, with the wounded and the convalescent walking beside, or seated on them, the true relics of the fight. It was almost impossible for them to get past the bridge, they were surrounded by multitudes, anxious to shake hands with them, and to bless them for their gallantry, and I saw many an eye full of tears, and many a breast heaving with heavy and painful sobs, as the people noticed the empty sleeves, the pale, scarred faces, and emaciated frames of these gallant men, just so far restored to health that they had been able to leave

the crowded hospitals of the Netherlands and France, and come home the mere wrecks of what they once were. The pomp and circumstance of glorious war is what one generally sees, but behind lurks the bloody battle-field, the broken limbs and mangled bodies of the wounded; and the hospitals, too often, in those days, perfect shambles, and more terrible to the soldier than even the shot or steel of the enemy. Little wonder, therefore, that the people were greatly affected by the sight of these invalids, and that they brought out to them bread and wine, and all manner of creature comforts, and that they crowded around them with affectionate commiseration.

"There are large barracks in Berwick, which then were full of troops, so that the gallant Black Watch had to be billeted in the town. Before the barracks there is a large esplanade, called the Square, having the parish church opposite the barrack-gate, and commanded by the old ramparts on two sides. In this square the regiment was drawn up, and to that part of the walls everybody hurried, while the magistrates and gentry of the town—who were to give a grand dinner to the officers in the evening—walked thither from the town-house in a kind of procession, followed by carts loaded with all kinds of eatables and drinkables for the private men. The regiment piled their arms in the square, and tables were brought out of the houses, and chairs and forms arranged around them, and there they were feasted at the town's expense. I mind I had never seen soldiers pile their arms before, and I was struck with the sight, and besides, it was so pleasant to see so many men all happy and cheerful, and the townsfolk all so uplifted about them, that I rejoiced in the sight very much, as did all those around me. The 42nd was the first of the fighting regiments from Waterloo that had come as far north as Berwick, and so the folk made much of them, besides, it was one of the most famous of all our regiments, and the cry, 'Scotland for ever!' seemed to ring in our ears as we looked upon them."

Although the story of 'Matthew Paxton' is not wholly devoid of the ordinary attractions of works of fiction, the chief interest of the book lies in the simple and forcible descriptions of scenes, and the lifelike sketches of customs and manners, different from those which fall under the common observation of most readers.

The Census of Great Britain in 1851. Longman and Co.

[Second Notice.]

On looking at the Registrar-General's statement of the conjugal condition of the people, our first impression is one of astonishment at the liberal facilities provided by nature for replenishing the work of the destroyer. We have seen that the population has increased within the last half century a hundred-fold, and we find that in the year of the last census the excess of births over deaths was nearly one-third—615,000 births to 390,000 deaths—and yet the peopling force of the nation, if we may so call it, is only exerted in a comparatively moderate degree. A large number of men and women, in every part of Great Britain, who live to advanced ages, never marry. The Registrar-General's editor announces, somewhat triumphantly, that the British population contains "a reserve of more than a million unmarried men, and of more than a million unmarried women, in the prime of life, with as many more of younger ages;" and that if these celibate millions were married, it would result that the births per annum, instead of being 700,000, would be 1,600,000. Let the world no longer sneer at bachelors and old maids, but rather let them be honoured for their single blessedness. Let those who are married beware lest the unmarried millions marry, and so double and quadruple the annual compound increase of births to an extent which might in that case be really alarming. "The perpetuity of the British nation is thus secured," continues the report, "against all contingencies:"—

"The proportion of children to a marriage, and consequently the population, are regulated, not so much or so immediately by the numbers of the people who marry as by the *age at which marriage is contracted*. The mothers and fathers of nearly half of the children now born are under 30 years of age; and if all the women who attain the age of 30 should marry, and none should marry before that age is attained, the births would decline to about two-thirds, and if the marriage age were postponed to 35 the births would fall to one-third part of their present number: so the population would rapidly decline; firstly, because the number of births to each generation would grow less; and secondly, because, as the interval between the *births* of successive generations would increase, and the duration of life by hypothesis remain the same, the numbers living contemporaneously — in other words, the population would be further diminished. The age at which first marriages take place necessarily varies according to circumstances in different populations and in different classes of the same population; in the eldest and youngest sons of noble families; in the various rising or declining professions; among skilled artizans and labourers.

"The *twenty-sixth year* is the mean age at which *men* marry, and the *twenty-fifth year* the mean age at which *women* marry in England and Wales. About this period of life the growth of man is completed. *Half* of the husbands and of the wives are married at the years of age 21 and under 25; the higher average age is the result of later marriages, which occur in great numbers at the age of 25-30.

"The *disparity* between the *mean age* of bachelors and of spinsters about to marry, is *one* year in favour of the former: and the range of disparity seldom exceeds twenty years, and is, as it should be, almost always in favour of the husband.

"Plato laid it down that in his republic the men should be united about the age 30-55; the women at the age of 20-40. Aristotle, who possessed a greater knowledge of natural history than any author of antiquity, remarks that the young of very old and very young animals are imperfect, and that the children also of very young or very old people are imperfect in mind and body. He asserts, too, that people should, for reasons that he alleges, marry at such ages that when the wife is in her 50th, the husband should be near his 70th year, or that men should marry about the age of *thirty-seven*, women about the age of *eighteen*. In particular cases, as has been seen, to meet the infinite variety of social circumstances, greater disparities of age than these occur in Great Britain; but the rule of Aristotle, if acted on universally, would work mischievously in various ways. *Thirty-three* women attain the age of eighteen to every *twenty-eight* men who attain the age of 37; and the women of the age of 18 and upwards are to the men of 37 and upwards as 1402 to 804; so that a disproportionate number of the women would be unmarried. The proportion of widows would be increased, and fathers would less frequently live to see their children attain maturity. The object which Aristotle had in view is obtained by the remarriage of widowers.

"The age of marriage cannot be directly fixed by laws; but legislation, by prescribing the minimum age of marriage, and the age of majority, does exercise a considerable influence on great numbers of the people directly, and on all indirectly. It becomes the custom or the fashion not to marry below the age of majority. Thus in England about 9000 young persons of the age of 20 and under 21 married in the year 1851; while about 139,000 married in the four years after they were *of age*, as it is called, or in the years of age 21-25. The age of majority is *twenty-five* years in France; and the age of twenty-five divided the *minores* from the *majores* in Roman law. This advanced age of majority, or of what becomes practically the lowest age of marriage, retards marriage indefinitely in many cases, and will probably be found, on investigation, to account, at least partially, for the comparatively small number of children to a marriage in France. By raising or depressing the age of majority the legislature then has the power to exercise considerable control over the population."

The more peaceable and godly nations are, the more they seem to increase in numbers, in wealth, and in happiness. Such a state of the relations between the sexes may be conceived to exist, as would either increase or diminish the population, and we find this abundantly proved on referring back to the wars and licentiousness of past ages. The Lord of heaven has provided largely indeed against the losses consequent on the wickedness of his people on earth, and we need only look back to a comparison of the very last two centuries for an illustration of this condition of things. In the century 1651—1751 the people were wasted by intestine wars, and by licentious and riotous living. But in the century which followed, 1751—1851, industry and love began to prevail, and the vices that in the former age were shameless and accredited, lurked only among wicked hearts and in concealment:—

"1651-1751.

"The first period extends from 1651, the year of the battle of Worcester, to the year 1751, which, in the 24th year of the reign of George II., and three years after the conclusion of the peace of Aix-la-Chapelle, was signalized by the death of Frederick Prince of Wales,—and the death of Bolingbroke,—the great 'Anti-Minister,' as he was called by his rival; and—as evincing the result of the scientific progress of the country, under Newton's inspiration,—by a measure which Lord Chesterfield introduced for the reform of the calendar. The population increased very slowly; and we find that after the restoration of Charles II., such a general dissoluteness of manners was inaugurated as can now be scarcely understood, while shortly after 1751 the law of marriage—which, like the institution itself, had grown inconceivably loose, and had at the same time been greatly abused—was reformed. The Poet Laureate, in a great political poem, which, it is believed, was written at the suggestion of the King, about the year 1681, formally advocated polygamy, or something worse.* Many of the cavaliers had lost their estates in the Revolution; all incomes were precarious; and the young men, who naturally would not marry so long as they were living very much like the officers of an ill-paid army, contracted habits of gallantry, as they were politely called; so that the introduction of a court by Charles II. on the model of the French King's was not received with that repugnance which it would otherwise have inspired. The light poets, the players, and the gay men and women on town, led crowds of votaries into the extreme opposite to Puritanism. Young people of both sexes were brought from the country to Whitehall; where, instead of hard lessons of elevated thought and patriotism, such as Lady Jane Grey and her contemporaries learnt from Plato,

* "The first part of Dryden's poem—'the greatest satire of modern times'—'Absalom and Achithophel,' which appeared in 1681, and was everywhere read and quoted, even 'in discourses from the pulpit,' opens with these lines, in which Charles II. figures under the character of David:—

"'In pious times, ere priestcraft did begin,
Before POLYGAMY *was made a sin;*
When man on many multiplied his kind,
Ere one to one was cursedly confined;
When nature prompted, and no law denied
Promiscuous use of concubine and bride;
Then Israel's monarch after Heaven's own heart,
His vigorous warmth did variously impart
To wives and slaves; and, wide as his command,
Scattered his Maker's image through the land.'

—*Sir Walter Scott's Edition of Dryden's Works*, vol. ix., p. 217.

"These atrocious lines depict, without any over-colouring, the creed of the age."

they masqued, 'ogled,' sang, and danced under the eye of the 'mother of the maids,' and the higher auspices of the Queen, the Queen Dowager, and the Duchess of York; until, wounded or terrified, they flew into concealment, or, as it was everywhere deemed, ridiculously married, and ingloriously discharged the duties of English wives and mothers. The sisters, daughters, and wives of the loyalest subjects, the greatest generals, the wisest statesmen, and the gravest judges, figured in the Paphian train; glittering and smiling as the troop of Boccaccio—in the pages of Grammont and on the walls of Hampton Court, but with advancing years shattered, patched, degraded, fading,—as they are seen in the authentic memoirs of the age and the life-like portraits of Hogarth. The Court of William and Mary, after the Revolution, grew frigid; and vice lost its graces and charms. Queen Anne was 'devout, chaste, and formal,' in the words of a noble writer, Lord Chesterfield, who was unconscious of the inestimable value of these homely but not shining qualities. A great revolution in the fashionable part of the kingdom followed the accession of George I., who had unfortunately left his wife in prison for a glaring impropriety, and brought over to England the fat Duchess of Kendal and the Countess of Darlington, who paraded their lives before the nation. The Prince and Princess of Wales 'encouraged and promoted pleasures;' which, pent up before, now rushed forth with impetuosity, 'and every door was willingly open to them.' Queen Caroline, who was agreeable, learned, talented, and judicious in the distribution of the Church patronage among the ablest clergymen, recognised, 'favoured, and promoted the King's gallantries,' which were never shared, however, by more than 'two avowed mistresses of rank, the Countesses of Suffolk and Yarmouth.' The dignities of the peerage in every reign of the period, except the interval under Queen Anne, were lavished on the Royal mistresses, by ministers whose lives threw into no reproving shade the majesty of the throne. If we exclude men of as little principle as Rochester, and of as strong passions as the good Lord Somers—who have their counterparts in all times—the lives of the whole race of statesmen, of lawyers, of literary men—of all classes of which records exist—show that the institution of marriage was unsettled to its foundations.

"Under this institution, in its natural state, the health, education, and fortune of their children, occupy the care and thought of two faithful parents; and successive generations are connected in families by indissoluble affections and associations: but under the loose, corrupt form of a state lower than polygamy that we here witness, the children are neglected, and perish; the intriguing mother is constantly preoccupied; the father knows them not, hates, or neglects them; so that the new generation is dissevered or entirely alienated from its ancestors; and the sons are not brothers, but envious rivals. Thus, after the death of Charles II.—by poison some suspected—his beloved son Monmouth was beheaded for rebellion by his brother James II.; who was himself driven into exile from a throne which his daughter and her husband filled. The bitter antipathy of George I. to the Prince of Wales, and the quarrels of George II. and his son Frederick—as well as the intrigues of the King's mistresses—fill the memoirs of the time, and occupied the attention of Parliament.

"The enmities and fatal divisions in families were generally diffused; but were most conspicuous, and perhaps not the least prevalent, among the highest classes of society.

"It is not true that 'vice and folly generally in all countries begin at court;' but, with the encouragement which they found there in this century, they spread through the country extensively, and infected not only the middle classes but the artizans in towns. The plays, novels, poems and memoirs, down to 1751, exhibit the licentiousness of opinion; and in licentiousness the practice seldom falls short of the profession, although in the latter part of the period the cant of atheism, libertinism, and conjugal infidelity was evidently often insincere. * * * *

"Although a large portion of the population suffered more or less from this state of things, a part remained unaffected; and a great improvement began and became visible, about 1741; but in 1651-1751 the population of Great Britain only increased 16 per cent.—the increase was *one million and fourteen thousand* in a *hundred years.*

"1751-1851.

"The effects of licentiousness had been felt, and the old generations had died out. The foreign wars furnished employment to large numbers. The house of Brunswick was firmly established on the throne by the final extinction of the Stuarts' pretensions in 1745. The Highland clans were conciliated by the wise policy of confidence, and the union with Scotland was cemented. The sciences, which Charles II. had encouraged in the Royal Society, were applied extensively to industrial purposes; and commercial integrity grew up under the influence of the public credit which Sir Robert Walpole had wisely fostered. The people grew more enlightened; and the many admirable works, by the clergy of the Church of England, by the Nonconformists, and by philosophers who looked at society purely from a temporal point of view, began to produce sensible effects on public opinion, and on the manners of town and country. The Methodism which a man of genius preached among the poor was but one of the indications of increased spiritual activity, and of the importance which the lowest as well as the middle classes now attached to the regulation of the passions and to the excitement of the moral sentiments. One of the first evident reforms was in the law of marriage, which was placed on a greatly improved footing by a bill which was carried, after arduous and able debates, by the influence of Lord Hardwicke. * * *

"That the state of manners had undergone great improvement in 1753 is evident from the healthy tone of the speeches in the marriage debate. Fox, who descended from the school of Walpole, indulged in violent but not in indecent language. Nugent, in an able speech against any alteration of the law, contrasted the conjugal state of England with that of France, and held up to reprobation what England had before been invited by the party of the Restoration to imitate. The great moralist of the century, who was not disposed to flatter on such a subject, 'praised the ladies of the present age (1776), insisting that they were more faithful to their husbands and more virtuous in every respect than in former times, because their understandings were better cultivated.'

"As every age has its Lucy Hutchinson or its Lady Rachel Russell, as well as its Castlemaine or its Lady Shrewsbury of the time of Charles the Second, it is not from singular instances that the manners of a people can be inferred, but rather, where facts cannot be defined in numbers, from the general tone of opinion: and the tide of public opinion now set strongly against licentiousness. Lady Yarmouth afforded 'the last instance in our annals of a British Peerage bestowed upon a royal mistress,' a noble writer is able to pronounce with evident and justifiable satisfaction. Frederick, Prince of Wales, who married the young Princess of Saxe-Gotha, in 1736, or towards the close of the previous period, 'adored his wife,' Mr. Macaulay remarks, 'and thought her mind and person the most attractive of her sex. But he thought that conjugal fidelity was an unprincely virtue, and in order to be like Henry the Fourth and the Regent Orleans, he affected a libertinism for which he had no taste, and frequently quitted the only woman whom he loved for ugly and disagreeable mistresses.' Others, like the Prince, were not misled by passion, but by custom and opinion. The state of opinion changed so much and so completely, that in 1763 the Earl of Sandwich, a minister not known before for his puritanism, but as a participator in the orgies of Medmenham Abbey, denounced the 'Essay on Woman' by Wilkes, in the House of Lords, with a view of holding up the author of a libellous number, *Forty-five*, of the 'North Briton,' to public odium. The House of Lords passed a resolution declaring the essay 'a most scandalous, obscene, and impious libel.'

"It is to the conduct of two young princesses, the Princess (Frederick) of Wales, whose abilities Sir Robert Walpole at once perceived, and Queen Charlotte, that the great change in public opinion and manners is in no slight degree to be referred. They represented and they promoted the change of manners. After the death of Prince Frederick, his son George, imperfectly educated in literature, was carefully brought up at Leicester House, so that Lord Waldegrave, by no means friendly to the Prince's mother, says that the young Prince of Wales was 'of a modest, sober disposition, with a healthy vigorous constitution.' A year after he ascended the throne as George III., in 1760, at the age of 23, under the advice of his mother, he married Charlotte of Mecklenburgh-Strelitz, who attained the age of 17 in that year. Of the political course of George III. and Queen Charlotte, opinions necessarily still differ; but the truth of the testimony to the Queen's private virtues will be universally admitted:—'Pure and above all reproach in her own domestic life, she knew how to enforce at her Court the virtues, or, at the very least, the semblance of the virtues, which she practised. To no other woman, probably, had the cause of good morals in England ever owed so deep an obligation.' The Queen devoted much time to the education of her family. The simple, pure life of the Royal Family, soon became known in every cottage of England and Scotland, and afforded a striking contrast to the scandals of preceding reigns. In his 'Idea of a patriot King,' an English political writer who frequented Leicester House—after he had himself exhausted the cup of pleasure—pleaded with an eloquence that has never been surpassed, the importance in a prince of a virtuous private life, and showed that a good king should begin by being a good man. At least, he intimated decorum should reign around him, as it did around Augustus and the court of Louis XIV. Decorum reigned in the court of George III.; but it was not the result of calculation or of philosophy, but of the love of order, of duty, and of religion. This prince as zealously promoted the family, as an institution, according to the old Anglo-Saxon type, as Charles II. propagated the oriental fashion, or its spurious modification. Of this, among other proofs, was the Royal Marriage Act, which he suggested; the troubles in the Royal Family, which arose chiefly on conjugal questions; and his constant opposition to ministers of shining talents, but of manners less strict than his own; or to whose advice, influence, and seductive example he ascribed the dissipation of the princes of his family. Neither the bitter war of faction—the gravest errors of policy, such as the substitution of a favourite Groom of the Stole for a great and popular minister, in critical times—the greatest disasters, such as the loss of the provinces of America—the anarchical excitement of the French Revolution—nor an affliction the most pitiable that can cloud the human faculties—shook the throne of the King; because, as if by some admirable instinct, the people of England felt that he had faithfully discharged all the duties which every head of an English family is bound to perform, and had thus contributed to the establishment of principles that are the sure foundation of the nation's happiness and greatness. He was to the last the 'good King,' whom they had pitied and blamed, but never hated; for he had placed the wife on the throne which the mistress had usurped: so that the idea of the English family lived again in all its old beauty. And this was a great social reform, which deservedly preceded all other changes.

"The social reform of the family was also promoted, to an extent which the history of the eighteenth century alone can explain, by the great minister who filled it with his fame. Lord Chatham, then William Pitt, in the first year of the new Act (1754), married Lady Hester Grenville, a lady, not only of great accomplishments, but of exquisite disposition, who devoted herself to her duties with fidelity, sagacity, and success. Chatham himself, when his health permitted it, never suffered, it is said, a day to pass without giving instruction of

some sort to his children, and seldom without reading a chapter in the Bible with them. On his monument his wife inscribed, with a truth which all his correspondence supports, the happiness of their 'family life.' His second son was educated at home from the age of six to fourteen, and profited so much in the society and by the instruction of Chatham, in eloquence and in wisdom, that he became the leader of the House of Commons and Prime Minister of this kingdom at the age of twenty-four, and filled that office, with but a short interruption, until his death in 1806. He inherited at least so much of his father's greatness that he was not oppressed by his glory. He never married; but the enemies of his policy allow that his private life was not stained by improprieties. 'He was not sent to a public school like Mr. Fox,' observes a living statesman, 'nor was he taken by his parents to a foreign gambling table, and initiated early' (as Fox was by his father) 'in the vices of a profligate age. He was educated at home, and with such regard to economy that when he was sent to Cambridge we find that one of his earliest calculations referred to the comparative cost of keeping his horse at grass or in the stable.'

"The children of many other families were apparently educated about the same period at home, to withdraw them from the corrupting opinions and manners which prevailed in the public schools, and had been handed down from the previous generation in uninterrupted succession.

"Charles Fox, who was as precocious as William Pitt, and had many of the great qualities which insure the possession of power in England, proposed the abrogation of Lord Hardwicke's Marriage Act in 1772. He went out of office under Lord North, apparently to oppose the Royal Marriage Bill. The course of his private life brought down on his head, while he was still in office under Lord North, the displeasure of George III.; which was sanctioned afterwards by the censure of national opinion. His genius, his tenderness, his eloquence, and his love of liberty, however, softened and threw some splendour over the vices, which descended in a turbid stream from the previous times; and which afterwards, in the Regency as well as in the reign of George IV., bursting again from the narrow bounds in which they had been confined, threatened to overflow society: but a reaction took place; conjugal vices were persecuted, and no longer met with applause or indulgence, in king or poet, under the crown or under the laurel. English literature, in the pages of Shakspeare, Spenser, and Milton, had offered nothing but creations of purity and dignity in women,—such as are to be found in the literature of no other nation,—and recovered its inheritance in Addison, Goldsmith, and Johnson,—in Walter Scott,—and in the subsequent writers, whether poets, dramatists, or novelists, who deal with manners.

"It cannot be pretended that the conjugal relations or the manners of the present age are perfect, if we look at the interests of the great number of children who are still unfortunately born out of wedlock,—at the facts which are revealed before the Courts of Law,—or at other facts, equally notorious, which will probably figure in the pages of chroniclers as envious and malignant as Lord Hervey and Horace Walpole. But improvements in manners, neither recorded nor easily expressed in figures, unquestionably distinguish this century."

Happily we may look back on the history of the last century, with feelings of the deepest gratitude, for this enlarged and improved social condition. Instead of counting seven millions of people, of whom a large part were of licentious and rebellious habits, we have by this time a population of four times that amount, living in more purity; busily employed in manufactures and in commerce; in literature, science, and the arts; in defending the cause of right and probity from the invasion of tyranny and oppression; and in sending out growing families to colonise and cultivate land in foreign parts.

NOTICES.

The Collected Works of Dugald Stewart. Edited by Sir William Hamilton, Bart. Constable and Co.

THE second volume of the collected works of Dugald Stewart contains the first volume of the 'Elements of the Philosophy of the Human Mind.' This volume was the earliest of Mr. Stewart's writings, having been published so long ago as 1792. The Elements consist of three volumes, published at considerable intervals, the second in 1814, the third in 1827. Mr. Stewart in the third volume (1827), inserted some passages for addition to the first; these are now for the first time entered in their proper places. Sir William Hamilton has very judiciously prefixed to this volume part of the 'Outlines of Moral Philosophy,' which the Professor used in his class, and which bear reference to the intellectual powers. Sir William, very much to the ease of the reader, has occasionally rectified and filled up authorities and their citations; and fairly states, "In regard to what I have myself contributed to this collection, I may repeat, that I have limited my interference strictly to the province of an editor, and it was manifestly no part of my official duty to meddle with the author's reasonings. Accordingly, there has been nothing added by me, in the view of vindicating, of supplementing or confirming, of qualifying or criticising, Mr. Stewart's doctrines. I have proposed, exclusively, to render this edition the one in which these might be most conveniently studied."

History of Russia from the Foundation of the Empire by Rourick to the Close of the Hungarian War. By Alphonse Rabbe and Jonathan Duncan, B.A. Ingram and Co.

RABBE'S 'History of Russia,' originally published in the 'French Historical Library,' edited by Felix Bodin, terminated with the fall of Napoleon. To a translation of this work, Mr. Duncan has added the history of the reigns of Alexander and of Nicholas, down to the end of the Hungarian war. Separate chapters are devoted to an account of the social condition and political institutions of the empire. Mr. Duncan has also prefixed to the work a chapter on the origin of the Russians, in which the people are described from ethnological as well as historical points of view. An account is here given of the various races and tribes that now constitute the vast empire in Europe and Asia. The work contains a great amount of information within a small compass, and though some parts of the historical narrative are brief in statement, as many details are given as the majority of readers are likely to desire or to remember. References are given to works in which fuller information on particular subjects may be found. The volumes appear in the series of the 'National Illustrated Library.'

Dogs, and their Management. Illustrated by numerous Woodcuts. By Edward Mayhew. Routledge and Co.

MR. MAYHEW in this volume publishes the results of long study and much experience of the diseases which canine flesh is heir to. Of the pathology of dogs, no other treatise gives so full and practical an account, and the book deserves the careful attention of all who, as professional practitioners, or as anxious amateurs, have to do with this department of veterinary science and art. Mr. Mayhew professes to introduce a new plan of treating the diseases of the dog, based on a consideration of his natural temperament. The management of cases has hitherto been most empirical, and there is no doubt that room was left for some of the improvements in practice suggested by the author. The volume is illustrated with numerous woodcuts.

Satire and Satirists. Six Lectures by James Hannay, Author of 'Singleton Fontenoy.' Bogue.

WE refrain from criticism on this volume, as its matter appears under the disadvantage of having been prepared for oral delivery in the form of lectures. For this style of composition there is generally assumed a lightness of diction, and affectation of smartness, supposed to be necessary for awakening and sustaining attention in audiences not always the most cultivated, and scarcely competent to follow an address, such as would satisfy thoughtful and educated readers on its being published. Mr. Hannay's book has to some extent this drawback in point of its literary style, but we must bear testimony to the variety of interesting biographical notices, as well as the critical comments contained in his lectures, from which most readers may obtain information as well as entertainment. The following are the titles of the six lectures,—1. Horace and Juvenal; 2. Erasmus, Sir David Lindsay, and George Buchanan; 3. Early European Satire; Boileau, Butler, and Dryden; 4. Swift, Pope, and Churchill; 5. Political Satire and Squibs; Burns; 6. Byron, Moore; and Present Aspect of Satirical Literature.

The Subject-Matter of Ten Lectures on some of the Arts connected with Organic Chemistry. By William Thomas Brande, F.R.S. Edited by J. Scoffern, M.B. Longman and Co.

THIS volume is compiled from the notes of lectures delivered at the Royal Institution by Professor Brande. It was the last course delivered by that scientific and learned chemist before his retirement from public duties at the Institution with which his name had been for so long a period honourably and usefully associated. The subject is 'Organic Chemistry in its Application to the Arts and Manufactures.' The notes were entrusted to Mr. Scoffern, and have been prepared for the press under Mr. Brande's sanction and superintendence. Mr. Scoffern has performed his editorial duties with care, and the volume is a valuable contribution to the literature of chemical science and art.

Evenings with the Romanists. With an Introductory Chapter on the Moral Results of the Romish System. By the Rev. Hobart Seymour, M.A. Seeleys.

THE introductory portion of this volume has already been published in the form of a letter to Lord Palmerston, in which the moral and social results of Romanism have been exhibited by historical narratives and statistical facts. We are not disposed to refer to the subjects in detail, but commend the work to the perusal of all interested in the question, Mr. Seymour's well-known familiarity with the doctrines and practices of the Romanists, and his great candour and moderation of spirit, entitling any work coming from his pen to earnest and attentive consideration. Few of the controversial topics connected with the popish system are left untouched in the work, and the statistical facts introduced in the preliminary chapter deserve the study of politicians as well as theologians.

SUMMARY.

IN Nichol's 'Edinburgh Edition of the British Poets,' edited by the Rev. George Gilfillan (J. Nichol), the second volume of *Butler's Poetical Works* contains the concluding part of 'Hudibras,' and the 'genuine remains' of Butler, including the various readings and additions to 'Hudibras.' In the 'Annotated Edition of the English Poets,' edited by Robert Bell (John W. Parker and Son), a volume contains the poetical works of Sir Thomas Wyatt. In a collection containing such a variety of miscellaneous pieces, more than three hundred separate poems, some editorial slips or negligences were likely to occur; but on the whole the volume is edited with care and intelligence, and the biographical introduction and critical notes are interesting and appropriate.

A second edition is published, greatly enlarged, from materials left by the author, of *Lectures on Polarized Light*, by the late Jonathan Pereira, Esq., M.D., F.R.S. The lectures were delivered originally before the members of the Pharmaceutical Society of Great Britain, and were printed in the 'Pharmaceutical Journal.' This new edition has the advantage of being edited by the Rev. Baden

Powell, Savilian Professor of Geometry at Oxford, one of the highest of scientific authorities on all matters connected with optics. While adhering as far as practicable to the form and substance of the original lectures, Professor Powell has added various facts and illustrations, which render the work more complete and useful as an elementary treatise on the subject of polarized light. A lecture by Mr. Pereira, giving a popular account of the microscope and its uses, is appended to the volume.

An Essay, to which was awarded the prize offered by George Baillie, Esq., of Glasgow, on the *Errors of Infidelity* (Hall, Virtue, and Co.), was gained by David M'Burnie, whose book, entitled 'Mental Exercises of a Working-Man,' we noticed in our last paper. Mr. M'Burnie's Essay contains a clear and succinct statement of the chief facts and arguments urged against infidelity. Under the form of a reply to the question of *What, where, and who is Antichrist?* (Bagster and Sons), the Rev. H. H. Beamish publishes the substance of four lectures, delivered by him during Lent of this year, on the Pope and the papal system. The appendix contains a collection of remarkable quotation, from the days of the ancient fathers down to Luther, Calvin, and Cranmer, bearing testimony to the common belief of the learned in the applicability of the scriptural terms of Babylon and the Apocalyptic beast to a place and system of modern corrupt Christianity, such as corresponds with Rome and the Romish church.

A translation of portions of the works of St. Alphonsus Liguori is published under the title of *The Christian Virtues, and the Means of Obtaining them*, edited by Robert A. Coffin (Burns and Lambert). The book is recommended by Paul Cullen, John Dixon, and other prelates and dignitaries of the Roman-catholic church in this country, as being "most instructive and edifying, and replete with the true spirit of Catholic piety." With all that Protestants deem erroneous, there is much that is earnest and good in the writings of St. Alphonsus, and this translation presents some of the best parts of his works to English readers. Of the following volumes and pamphlets we can give only the titles. In the Run and Read Library (Clarke, Beeton, and Co.) is published Miss Catherine Sinclair's tale of *Modern Flirtations*. Volume the first of *The Library of Biblical Literature*, contains papers on Ancient Nineveh, Egypt, and the Pyramids, the Red Sea, the Captivity and its Mementoes, and other subjects illustrative of biblical history. A tale, *Charles Dallaway; or, the Restless Man* (J. and E. Mozley), shows the advantages of steadiness and good principle both for this world and the next. A lecture *On the Teaching of Common Things*, delivered, by the Rev. Richard Dawes, Dean of Hereford, at St. Martin's Hall (Groombridge and Sons), presents a brief statement of the views of the writer on this branch of education, to which he has devoted much attention. *A Discourse on Medical Botany*, by Earl Stanhope (Churchill), gives the substance of unpublished addresses delivered by him to the Medico-Botanical Society, of which he was President.

Among recently published educational books is one entitled *Arithmetic on Improved Principles*, including the properties of logarithms, with copious examples, by the late William Redknap (Rivingtons). *The Young Ladies' First French Book*, with vocabulary of words, by R. Aliva (Hope and Co.) In an introductory disquisition, the writer offers remarks on what he deems the proper mode of teaching French, pointing out some of the faults of prevalent systems of tuition.

LIST OF NEW BOOKS.

Arthur's Juvenile Library, 12 vols. 18mo, cloth, each 2s.
Baldwin's (E.) England, new edition, 12mo, bound, 3s. 6d.
Churton's Early English Church, new edition, 12mo, 4s.
Clacy's Lights and Shadows of Australian Life, 2 v., £1 1s.
Clement's Customs Guide, 1854 and 1855, 12mo, cloth, 6s.
Cox's (H.) British Commonwealth, 8vo, cloth, 14s.
Dixon's (H.) John Howard, new edition, fcap. boards, 2s. 6d.
Drummond's (D.) Rome's Red Foot Prints, 12mo, 2s. 6d.
Fairholt's (F. W.) Dictionary of Terms in Art, cr. 8vo, 10s. 6d.
Gibson's Testimony of the Church to Holy Baptism, 10s. 6d.
Gouge's Golden Age, and other Poems, 12mo, cloth, 7s. 6d.
Harding's Elementary Art, new edition, imperial 8vo, £1 5s.
Hill Side (The): Illustrations of Logic, 12mo, cloth, 2s. 6d.
Home Truths for Home Peace, 6th edition, fcp. cloth, 3s. 6d.
Index to Arnold's Thucydides, Vol. 2, Part 2, 8vo, bds., 6s.
James's (J.) Treasury of Medicine, 12mo, cloth, 5s.
Kingston's (W. H. G.) Circassian Chief, 12mo, boards, 1s. 6d.
Landmarks of Ancient History, new edition, 12mo, 2s. 6d.
Le Breton's (S.) French Scholar's First Book, 12mo, cl., 3s.
Longfellow's Golden Legend, 1s.; illustrated, gilt. 2s.
Pocket English Classics, 7 vols. 32mo, cloth, 10s. 6d.
Ribbans's (F. B.) Tintern Abbey, 4to, cloth, 7s.
Rhodes' Personal Narrative, 2nd edition, post 8vo, cloth, 5s.
Tour (The): a Poem, by W. F. P., fcap. 8vo, cloth, 3s.
Ward's (Mrs.) Lizzy Dorian, 12mo, boards, 1s. 6d.
White's Invalid's Hymn Book, new edition, 18mo, 2s. 6d.
Wilton's (J. H.) First Crime, fcap. 8vo, cloth, 5s.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

At the close of the last meeting of the British Association at Hull, we felt it our duty to complain of the scanty attendance of scientific men, and, as a consequence of this desertion, the meagre quality of the papers read and discussed at the different sections. The townspeople were extremely generous in their reception of the Association, but few of the leading members attended, and the real spirit and active life-blood of the Institution was wanting. This year, at Liverpool, the fortunes of the British Association have revived in a degree which promises well for the interests of science. More than double the number of old members are present, and these, it will be understood, comprehend almost wholly the men of working scientific eminence. By the following tabular comparison of the first day's announcement of members in the two ports, it will be seen that the number registered on the first day in Liverpool has been nearly double that at Hull, and the receipts of money have been more than double.

Numbers—Wednesday, eight o'clock p. m.

	Liverpool.		Hull.	
Old Life . .	218 . .	£ — . .	91 . .	£ —
New Life . .	12 . .	120 . .	10 . .	9
Old Annual	80 . .	82 . .	42 . .	40
New Annual	79 . .	158 . .	48 . .	96
Associates .	521 . .	521 . .	272 . .	272
Ladies . . .	362 . .	362 . .	175 . .	175
Foreigners .	6 . .	. .	3 . .	
	1278	£1243	641	£592

General Committee.

The business of the Association commenced, as usual, at one o'clock on Wednesday, with the meeting of the General Committee in the Boardroom of St. George's Hall, and it was very soon filled with the old familiar faces, whose practical habits and sense of duty prompt them to be thus early in attendance. Mr. Hopkins, the Hull President, occupied the chair, and Lord Harrowby, the President elect, sat beside him. Professor Phillips having read the minutes of the two preceding meetings, Colonel Sabine presented the Report of the Council. It was composed of two documents of especial interest, as showing the growing national importance and public usefulness of the Association. The first was an account of the proceedings of the Parliamentary Committee, and the second, of the Committee of the Observatory at Kew.

Report of the Parliamentary Committee of the British Association, to the Meeting to be held at Liverpool in September, 1854.

The Parliamentary Committee have the honour to report as follows:—

The subjects to which the attention of the Committee has been directed since their last report are—

1st. Lieut. Maury's scheme for the improvement of navigation.

2nd. The conditions on which pensions are now bestowed on men of science.

3rd. A correspondence which they have commenced with various eminent cultivators of science on the question—Whether it might be possible to improve the position of science or its cultivators in this country by any measures to be adopted by Government or Parliament.

4th. The proposed juxtaposition of the scientific societies in some central locality of the metropolis.

As to the first,—

The Chairman and Mr. Heywood have had interviews with the President, the Vice-President, and Officers of the Board of Trade on this subject, and Mr. Heywood has on two several occasions addressed some remarks to the House of Commons thereon; and the Committee have great pleasure in reporting, that Government have now established a department in the Board of Trade, with the view of carrying out in every particular the recommendations of the Royal Society and this Committee, in reference to this important scheme for improving navigation, and accumulating meteorological data to an extent far surpassing anything which has hitherto been attempted. The Government have also appointed Capt. Robert Fitzroy, R.N., to be at the head of this new department, which is in itself a guarantee that it will successfully carry out all the important objects for which it has been established.

Scientific officers of the navy and mercantile marine will now feel assured that the records of their valuable observations and surveys will no longer slumber neglected amidst the dust of offices, but be reduced and rendered available to science and mankind without any unnecessary delay. The sum voted for the new department by the House of Commons for the present year is 3200*l.*, but there can be no doubt that this sum will be augmented in future years, if the expectations that we have been led to form as to the inestimable public benefits likely to flow from the labours of this office shall be realized.

Captain Fitzroy has since his appointment been employed in superintending the construction of instruments, printing forms, and selecting agents at the outposts. Some ships will be supplied with instruments in October, and Captain Fitzroy expects that the new office will be fully organized in the succeeding month.

The following correspondence relates to the 2nd subject above-mentioned:—

"14th March, 1854.

"My Lord,—As Chairman of the Parliamentary Committtee of the British Association appointed for watching over the interests of science, I have been requested to address you on a subject of great importance to those interests.

"Your lordship is probably not aware, that soon after the accession of the late Government to power, Sir Robert Inglis and myself solicited and obtained an interview with Lord Derby, in which we represented to him that considerable dissatisfaction prevailed among the cultivators of science generally at the bad success which had attended certain then recent applications for pensions to some eminent scientific individuals, which had been preferred by the President of the Royal Society, and by subsequent investigations it was ascertained (and I communicated the fact to Lord Derby by letter dated in April, 1852), that since the accession of Her Majesty about thirteen per cent. only of the annual sum allowed by Parliament to be granted for pensions to deserving persons had fallen to the lot of science, a result which naturally contributed to increase that feeling of dissatisfaction to which I have already adverted.

"It appears that a recent application by Lord Rosse of a similar character has been unsuccessful, and that your lordship in declining to accede to it expressed yourself as follows:—'In order to meet even a small portion of the claims preferred to me, I have been compelled to require that poverty should be the attendant of merit; and that the pension should be as much the relief of pecuniary distress as the acknowledgment of intellectual attainments.' Lord Rosse could not of course consider a letter from your lordship on a subject of vital importance to science in the character of a private communication; and as that subject had already been referred to the consideration of our Committee, of which he is an influential member, a copy of your lordship's letter was laid before it.

"Now whatever our individual opinions may be on the merits of the particular case to which I have

alluded, I purposely abstain from stating them, in order that the object of the present address may not be misunderstood,—that object being, to represent to your lordship, with all that respect which is justly due both to yourself and to the high station which you occupy, that the views above expressed as to the disposal of the pension fund, would render absolutely nugatory, so far as science and its cultivators are concerned, all the benevolent intentions which Parliament and the country must be supposed to have entertained in their favour when the provision in question was created.

"That the grant of a pension would be an inappropriate method of recompensing scientific merit when possessed by those who may be properly termed *rich*, I am not disposed to deny; but if it were hereafter to be understood that the receipt of a pension from the Crown were full as much the indication of absolute poverty, as an acknowledgment of high intellectual attainment, we apprehend that the object of the grant would be hereafter but ill attained.

"Had such a view of the intention of Parliament been formally announced, the honoured names of Airy and of Owen, of Hamilton and Adams, would never have appeared on the pension list; and that small encouragement to abstract science which has hitherto been dispensed by the British Government, would virtually have been withdrawn;—the bounty of Parliament and the Crown would have been looked upon in the light of alms, and men of eminence would not have consented to be paraded before the public as its needy recipients. Considering your lordship's known appreciation of the claims of literature, and we hope we may also add of science, upon a nation which depends so essentially for its prosperity and even safety upon the progress of improvement in every branch of intellectual exertion, I cannot but express on my own part, and on that of my colleagues, our earnest hope that your lordship will reconsider your views of the object of pensions, and refrain from exacting conditions for their enjoyment which cannot be otherwise than painful to all who have a high sense of the dignity of their pursuit, and may possibly be considered as tending to degrade it.

"I remain, &c.

"WROTTESLEY.

"To the Earl of Aberdeen, &c."

"Downing-street, March 29th, 1854.

"MY LORD,—The letter which I addressed to Lord Rosse in October last, in answer to an application from several distinguished scientific men for a pension of two hundred a year to Professor Phillips, was intended rather as a private explanation of the motives which had practically regulated my distribution of the Civil List Pensions, than as laying down any fixed principle on the subject. But, with the greatest respect for your Lordship's Committee, and after fully considering the matter, I do not know that I can materially qualify the statement made by me to Lord Rosse.

"It has been my endeavour, as much as possible, to appropriate these Pensions to persons more or less connected with science or literature, or to their families; but the vote of the House of Commons would include a much wider range. The general belief that these Civil List Pensions were intended by Parliament exclusively for science and literature is altogether incorrect; and it is right that this should be clearly understood.

"The following are the terms of the Act, by which the Queen was enabled 'to grant pensions not exceeding 1200*l.* in any one year, to such persons only who have just claims on the Royal beneficence, or who, by their personal services to the Crown, by the performance of duties to the public, or by their useful discoveries in science and attainments in literature and the arts, have merited the gracious consideration of their sovereign, and the gratitude of their country.'

"It is obvious that the whole sum of 1200*l.* might very easily be expended according to the terms of the Act, without any portion of it being appropriated to science and literature. Indeed, this great latitude has occasionally led to the insertion of names in the list which we scarcely might have expected to find there.

"Nothing would afford me more pleasure than to have the power of distributing a sum equal to the amount of all the Civil List Pensions, as an acknowledgment of scientific merit. There are three or four persons whose names I should be most anxious to include in such a distribution; but under present circumstances, I am prevented from doing so by want of means.

"On the whole, then, and without making any resolution which should preclude me from exercising a discretion on the subject according to the circumstances of the case, I am still disposed to think that, as a general rule, the practice I have followed must be considered as most extensively beneficial.

"I have the honour to be, &c.

"ABERDEEN.

"The Lord Wrottesley."

As to the 3rd subject above adverted to, the Chairman, with the sanction of the Committee, has addressed the following question to several distinguished men of science—Whether any and what measures could be adopted by the Government or the Legislature to improve the position of science and of its cultivators in this country? Several answers containing suggestions of great value and interest have been already received, and when the results of the inquiry have been embodied in a report, it will be communicated to the General Committee.

4th. The Royal Society Council having referred the question of the proposed juxtaposition of scientific societies to your Committee, the Chairman, together with several members of the Committee, accompanied a deputation to Sir William Molesworth, the Chief Commissioner of Works (to whom they had previously sent particulars of the amount of accommodation the principal scientific societies would require) on the 8th of July last; Sir William Molesworth, however, stated, that he had no actual authority to make any offer to the deputation of any part of the site of Burlington House. Some discussion took place on the various questions involved in this arrangement, and Sir William intimated his opinion, that the Societies already occupying apartments in Somerset House had peculiar claims on the Government, and would have a preference in the allocation of the site.

The Chairman availed himself of the opportunity afforded by the discussion of the Oxford University Bill in the House of Lords, to make some observations on the neglect of the study of Physical Science at that University; and it is indeed much to be regretted that the rewards held out as an inducement to the study of science in that University should be so insignificant in amount, and, secondly, that *some* knowledge, at least, of the laws and phænomena of nature is not required as a necessary preliminary to a degree; these studies are in themselves so attractive to the generality of minds, that the mere admission within the vestibule of science often leads to a successful exploration of its inmost recesses: and could the universities be induced to adopt this suggestion, our public schools would be compelled to teach it, its ranks would be immediately reinforced by a corps of zealous worshippers; and an increased demand would arise for professors, whose emoluments would furnish an additional stimulus to the prosecution of these delightful and soul-exalting pursuits.

The General Committee will hear with regret that Sir Robert H. Inglis, having retired from Parliament, has ceased to be a member of this Committee. Your Committee recommend that Mr. John Ball, M.P. for the county of Carlow, who is both an old member of the British Association, and well known as a cultivator of natural science, be appointed to succeed him.

Your Committee cannot take their leave of their late colleague without an expression of their grateful thanks for the zealous and valuable assistance which he afforded to them when his co-operation was invited; and when the Committee call to mind the various occasions on which he has supported the interests of science in the legislature, they cannot but consider that by the retirement of Sir R. H. Inglis from Parliament, science has lost therein a zealous advocate and a sincere friend.

WROTTESLEY.

13th September, 1854.

The labours of the Parliamentary Committee have been of great value, it will be seen, in establishing a department in connexion with the Board of Trade, for the improvement of navigation; but for the reward and improvement of scientific men the Government are less easily moved. They appear reluctant to interfere with the valued independence of Englishmen, or to introduce any alloy into that high spirit of refinement which is so distinguished, if not so lucrative an element in the scientific character.

Of the report of the Kew Committee we can only afford room for an abstract.

In their report for the last year, your Committee stated that an application had been made to them by the Hydrographer of the Admiralty for advice as to the construction of thermometers to be supplied to Her Majesty's Navy, for the purpose of making meteorological observations at sea, and that your Committee had undertaken to provide a specimen of the form of instrument which they might consider most suitable.

Messrs. Negretti and Zambra and Messrs. Cassella and Co. were selected by your Committee as those to whom applications should be made to furnish such thermometers.

The thermometer is constructed of enamelled tubing, and the divisions are etched on the stem with fluoric acid; the figures are stamped on the brass scale at every 10th degree, and each instrument is fitted to a japanned copper case with a cup surrounding the bulb, and has a distinguishing number. The cost, in consideration of the quantity ordered from the makers at one time, including the case, is 5s. 6d., and without the case 4s. 6d. for each thermometer.

On the 3rd of December, 1853, your Committee requested Colonel Sabine to inform the Hydrographer of the Admiralty that thermometers, according to the model described, could be supplied in any quantities.

On the 28th January, 1854, your Committee received an application from the Smithsonian Institution of the United States, through its agent, Mr. Stevens, for specimens of thermometers and barometers for marine use, as also for a standard thermometer. Mr. Stevens has since ordered one thousand thermometers for the use of the United States Navy, five hundred from each of the before-mentioned firms, and fifty marine barometers; the whole of these instruments, which will be similar to those described in this report, will be verified by Mr. Welsh at the Observatory.

On the 27th March, 1854, the Board of Trade addressed a letter to the Chairman of your Committee, requesting their aid in procuring barometers and thermometers for the use of the Mercantile Marine. On the 3rd of April the Chairman replied, stating that the Committee were willing to superintend the execution of any contract which the Board might make for the supply of such instruments, it being understood, as a principle, that the contract for such supply is to be between the Government requiring the instruments and the maker furnishing the same, the contract price in all cases to cover the cost of verification at Kew.

Barometers.—Your Committee stated, in their last year's report, that, in consequence of Lieut. Maury having requested their advice upon the best form of a marine barometer, the subject was under consideration; after having examined several forms of instruments, your Committee selected one in which it is believed all the requisites for making correct observations at sea will be found to have been obtained at a very moderate cost, combining convenience and accuracy in observing, with simplicity and durability in its general construction.

The great importance as to certain conditions

requisite in a good barometer induced your Committee to have the action of this instrument tested by such means as were at their command, and this was effected by Mr. Welsh (accompanied by Mr. Adie, the maker), in a voyage to Leith and back to London; subsequently the action of the instrument was further tested by Mr. Welsh in a voyage to and from the Channel Islands.

[The results of these experiments are detailed in a letter from Mr. Welsh, included in the report.] Mr. Welsh says:

"1st. Any one of the three barometers is capable of showing *at sea* the changes of pressure, with a probable error of about 0·005 inch, or at most 0·007 inch.

"2nd. The tremor of a steam-ship is rather beneficial than otherwise to the performance of the barometer, and (leaving the pumping out of consideration) the barometer performs rather better at sea than on land.

"3rd. For such a motion of the ship as must be very common, the amount of contraction of the tube should be greater than in any of the three barometers employed, say a contraction to 18 or 20 minutes. The *mean* amount of pumping from ten observations in the return voyage was, for the tube contracted to 5 minutes, 0·064 in., and for the one contracted to 10 minutes, 0·031 in.; the greatest observed being for the former, 0·13 in., and for the latter, 0·05 in. In order, therefore, to reduce the pumping so that the probable error of an observation from this cause may not exceed 0·01 in., the contraction should be to 20 minutes at least.

"4th. It appears to me very desirable that each ship should be furnished with *two* barometers—one for calmer weather and the other for rougher—the former having the tube contracted to 10 or 12 minutes, and the latter to about 25 minutes. This would render good observation obtainable in all states of the weather; and if occasional comparisons of the two were taken, would, besides obviating to some extent the inconvenience arising from an accident to one, afford the means of checking any changes which might occur in the zero points of either instrument. If, however, two barometers cannot be supplied to each ship, I am disposed at present to think that a contraction to about 15 or 20 minutes would be generally the most convenient."

A subsequent letter from Mr. Welsh (contained in the report) described experiments made with five of Adie's barometers on board one of the mail steamers plying to the Island of Jersey.

The principal object contemplated in the trial was the determination of the amount of contraction required in the tube for the prevention, within convenient limits, of the pumping of the mercury. The barometers were all of the same general construction, but differing in the amount of contraction in the tubes.

[The barometer, as now constructed by Mr. R. Adie, is then described in the report.

Appended to the report was the correspondence with the Hydrographer of the Admiralty and with the Board of Trade, explaining the proceedings of your Committee as to the proposed supply of these instruments for the use of Her Majesty's Navy, as also for the mercantile marine of this country. The Committee had also communicated with Lieutenant Maury, by whose directions the fifty barometers were ordered from Mr. Adie by Mr. Stevens for the use of the United States Navy, all of which are to be verified at the Observatory.]

Standard Barometer.—Your Committee have devoted much attention to the completion of this instrument, but many casualties have occurred during the progress of its erection. On the 13th July last, Mr. Negretti succeeded in boiling and erecting a tube of *one-inch* internal diameter. Considerable changes were found necessary in the original mounting of the barometer and cathetometer. These have been satisfactorily executed at the Observatory, but the instrument still requires alteration to render its performance perfect.

Definition of the Boiling Point of Water.—Your Committee, at the last meeting of the Association, were requested to furnish a report on the definition of the boiling-point of water as at present adopted in this country for the thermometric scale. This has already been considered by the commissioners appointed by Government to construct standard weights and measures, and in the report they have presented to Government during the present year, they have defined 212 degs. upon Fahrenheit's scale to represent "the temperature of steam under Laplace's standard atmospheric pressure, or the atmospheric pressure corresponding to the following number of inches in the barometric reading, reduced to 32 degs. F.,—29·9218 + 0·0766 × cosine (2 latitude) + (0·00000179 × height in feet above the sea)" Your Committee recommend that this definition be adopted.

Standard Thermometers.—The graduation of standard thermometers has been continued by Mr. Welsh, and twenty-four instruments have been issued since the last meeting of the Association, making a total of ninety-four standard thermometers supplied to institutions and individuals.

The requisite apparatus for determining the errors of barometers, as well as of thermometers, by comparison with the standards at Kew, has been constructed at the Observatory, and a detailed account of the processes employed will be given by Mr. Welsh in a separate communication to the British Association.

[Upon the subject of standard weights and measures, the report stated the comparison of the standard measures belonging to the Kew Committee with the standard of Government, by Mr. Sheepshanks, and the comparison of the lineal scale by Mr. Miller. The Committee, it appeared, now possessed standards of weights and measures, which they could adopt in all their further proceedings.

The report contained a communication from Sir John Herschel, in compliance with the request of the Committee, upon the subject of making, daily, photographic pictures of the sun's disc, showing the spots, &c. Sir John did not think that a very powerful telescope would be requisite, but that it should be equatorially mounted, and with a clock-motion in parallel.]

"The image to be impressed on the paper (or collodionized glass) should be formed, not in the focus of the object-lens, but in that of the eye-lens drawn out somewhat beyond the proper situation for distinct vision, (and always to the same invariable distance, to insure an equally magnified image on each day.) By this arrangement a considerably magnified image of the sun, *and also of any system of wires* in the focus of the object-glass, may be thrown upon the 'focusing-glass' of a camera box adjusted to the eye-end of the telescope. By employing a system of spider lines parallel and perpendicular to the diurnal motion, and so disposed as to divide the field of view into squares, say of 5 min. in the side, the centre one crossing the sun's centre, or rather, as liable to no uncertainty, one of them being a tangent to its lower or upper limb, the place of each spot on the surface is *ipso facto* mapped down in reference to the parallel and declination circle, and its distance from the border, and its size, measurable on a fixed scale.

"If large spots are to be photographed specially with a view to the delineation of their forms and changes, a pretty large object-glass will be required, and the whole affair will become a matter of much greater nicety, but for reading the daily history of the sun, I should imagine a three-inch object-glass would be ample.

"The representations should, if possible, be taken daily, and the time carefully noted." The report subsequently stated that 130*l.* had been procured from the Royal Society for the purchase of the necessary apparatus from Mr. De la Rue, and that the Committee had engaged Mr. Robert Beckley as machinist.

The report next alluded to the ground contiguous to the Observatory, about two acres of which the Committee desired to have for their temporary use, and which they had arranged to occupy, on the payment of 7*l.* 10s. per acre, and for the subsequent year 10*l.* 10s. per acre, at which period the present tenant's term with the Crown expires.

Two acres of the land have been enclosed with a strong wooden paling preparatory to the erection of a wooden tower, under the superintendence of Mr. De la Rue, for mounting the Huyghenian object-glass.

The daily increasing work in the Observatory, arising from the verification of meteorological instruments, as well as the probable necessity for other experimental purposes, renders it advisable that further assistance should be obtained; a portion of the increased expense that will be thus incurred your Committee anticipate will be obtained from the amount to be received for the verification of the instruments—viz., 10s. for each barometer, and 1s. for each thermometer.

Your Committee consider that the present yearly stipend received by Mr. Welsh ought to be increased. It is impossible for them to report in sufficiently strong terms the high opinion they entertain of this gentleman's services.

Considering the variety and importance of the objects which are now being carried out at the Observatory, the Committee submit for the consideration of the Council, that should the financial state of the Association at Liverpool justify an increase in the annual sum placed at the disposal of the Committee, they feel confident that a larger grant than has been allowed in the last few years, for the maintenance of the Observatory, might be so appropriated in the next year with great advantage to the interests of science, and to the credit of the Association.

By order of the Committee,
JOHN P. GASSIOT, Chairman

The business of the General Committee was then brought to a close by the reading of

The General Treasurer's Cash Account, from the commencement of the Meeting at Hull, September 5th, 1853, to commencement of the Meeting at Liverpool, September 18th, 1854:—

RECEIPTS.

	£	s.	d.
To Balance brought from last account	227	19	11
,, Received for life compositions at Hull, and since	180	0	0
,, For annual subscriptions, ditto	226	0	0
,, Ditto associate's tickets at Hull	367	0	0
,, Ditto ladies' tickets at Hull	236	0	0
,, Ditto twelve months' dividends on £3,500 three per cent. consols.	100	8	2
,, Ditto from the sale of publications,—viz., reports, catalogues of stars, &c.	179	13	6
	£1,517	1	7

PAYMENTS.

	£	s.	d.
For expenses of meeting at Hull, sundry printing, advertising, binding, and petty disbursements, made by the general treasurer and the local treasurer	134	2	9
,, Printing report of the 22nd meeting	438	16	3
,, Engraving for the report of 23rd meeting	45	18	6
,, Dove's Distribution of Heat over the Globe	70	9	0
,, Salaries, twelve months	350	0	0
,, Maintaining the establishment of Kew Observatory, viz.:—			
Balance of former grant	£130	15	4
Grant voted last meeting	200	0	0
	330	15	4
On account of grants:—namely,			
For investigations on flax	11	0	0
,, Inquiries into the effects of temperature on wrought iron	10	0	0

	£	s.	d.
Brought forward			
For Registration of periodical phenomena	10	0	0
„ Report on British Annelida ...	10	0	0
„ Experiments on the vitality of seeds	5	2	3
„ Inquiry on conduction of heat	4	2	0
Balance at the Bankers ... £90 12 6			
Ditto in the hands of the general treasurer and local treasurers ... 6 3 0			
	96	15	6
	£1,517	1	7

The balance of cash in hand has been reduced, it will be seen, from 227*l.* to 96*l.*, and the sums disbursed in grants have not exceeded 50*l.* This year, however, the funds of the Association will be enriched, and we may look for a larger surplus of the needful for promoting scientific experiments and researches.

Evening General Meeting.

The first general meeting of the Association was held in the Philharmonic Hall; it was admirably suited to the purpose, and the members assembled in great force. Several philosophers of eminence, who had not attended the General Committee, responded to the dinner invitation of the Mayor, and, "like giants refreshed with wine," they gathered round the President in excellent spirits and true scientific loyalty. The new President, the Earl of Harrowby, having been introduced, his lordship delivered the following

ADDRESS.

When I first set myself to the task of preparing to address you on the present occasion, my impulse was to begin with an apology for appearing before you in so prominent a position—for assuming apparently a station in the world of science for which I had no pretensions. On second thoughts, however, it appeared better—more respectful, in fact, having consented, though with unfeigned reluctance, to accept the office, to say no more on that head, but to discharge its duties as best I might. This, however, I must ask of you, not to expect from me what you have had from many of my predecessors—a luminous review of the state of physical science, a recital of its recent various triumphs, and suggestions for their further extension: that I should, in the words of the poet, though in a different sense—"Allure to brighter worlds, and point the way." Though I have been no indifferent spectator of that rapid and triumphant march of science which, within the last fifty years, has been extending and enriching the old domains of knowledge, and planting, as it were, new colonies in hitherto unexplored and untrodden regions, yet I have been only a spectator—my avocations have been less with the properties of matter than with the busy concerns of men; and if I attempted now to assume, for the first time, the philosophic garb, I am afraid that the awkwardness of my gait would soon betray me. There are, however, some points of high and general interest, which, in a meeting like the present, cannot be entirely neglected, and in regard to which the kindness of friends has supplied me with some matter not unworthy of being submitted to your notice. How, for instance, in the land of Newton, and in the greatest seaport of the world, should I neglect astronomy? And here Professor Challis has been good enough to furnish me with a statement of its present condition and recent progress, which, with your permission, I will lay before you.

NOTES ON THE PRESENT STATE OF ASTRONOMY.

Memorandum by Professor Challis.

"Since the meeting of the British Association last year, four planets and four comets have been discovered. Three of the new planets were found at Mr. Bishop's observatory, two by Mr. Hind, and one by Mr. Maith. This last was also discovered the following night at the Oxford observatory—another of the many instances presented by astronomy of independent discoveries made nearly simultaneously. The fourth planet was found at the observatory of Bilk, near Dusseldorf, by Mr. R. Luther, an astronomer distinguished by having already discovered two planets. Of the comets, one was discovered at Berlin, two at Göttingen, and the fourth was seen very generally with the naked eye at the end of last March. None of them have been identified with preceding comets.

"The large number of planets and comets discovered of late years, while it evinces the diligence of astronomers, has, at the same time, brought additional labourers into the field of astronomical science, and contributed materially to its extension. The demand for observations created by these discoveries has been met by renewed activity in existing observatories, and has led to the establishment, by public or private means, of new observatories. For instance, an observatory was founded in the course of last year by a private individual at Olmütz, in Moravia, and is now actively at work on this class of observations. Various such instances have occurred within a few years.

"In addition to the advantages just stated, the observations called for by the discovery of new bodies of the Solar System, have drawn attention to the state of *Stellar Astronomy*, and been the means of improving this fundamental part of the science. The following are a few words on the existing state of Stellar Astronomy, so far as regards *catalogues* of stars. Subsequently to the formation of the older catalogues of bright stars, astronomers turned their attention to observations in *zones*, or otherwise, of smaller stars, to the ninth magnitude inclusive. Lalande, Lacaille, Bessel, Argelander, and Lamont, are the chief labourers in this class of observations. But these observations, unreduced and uncatalogued, are comparatively of little value. The British Association did great service to astronomers by reducing into catalogues the observations of Lalande and Lacaille. A catalogue of part of Bessel's zones has been published at St. Petersburg, and a catalogue of part of Argelander's zones at Vienna. Lamont's zones have also been reduced in part by himself. The catalogue of 8377 stars, published by the British Association in 1845, is founded mainly on the older catalogues, but contains, also, stars to the seventh magnitude inclusive, observed once only by Lalande or Lacaille. The places of the stars in this catalogue are, consequently, not uniformly trustworthy; but as the authorities for the places are indicated, the astronomer is not misled by this circumstance.

"The above are the catalogues which are principally used in the observations of the small planets and of comets. This class of observations must generally be made by means of stars as fixed points of reference. The observer selects a star from a catalogue, either for the purpose of finding the moving body, or for comparing its position with that of the star; but, from the imperfection of the catalogue, it sometimes happens that no star is found in the place indicated by it, and in most cases, unless the star's place has been determined by repeated meridian observations, it is not sufficiently accurate for final reference of the position of the planet or comet. In catalogues reduced from zone observations, the star's right ascension generally depends on a single transit across a single wire, and its declination on a single bisection. This being the case, astronomers have begun to feel the necessity of using the catalogue places of stars *provisionally*, in reducing their observations, and of obtaining afterwards accurate places by meridian observations.

"It will be seen by this statement that, by the observations of the small planets, and of comets, materials are gradually accumulating for the formation of a more accurate and more extensive catalogue of stars than any hitherto published. The British Association would add greatly to the benefits it has already conferred on astronomical science, by promoting the publication, when sufficient materials can be collected, of a general catalogue of all stars to the ninth magnitude inclusive, which have been repeatedly observed with meridian instruments. The modern sources at present available for such a work are the reduced and published observations of the Greenwich, Poulkova, Edinburgh, Oxford, and Cambridge observatories, and the recently completed catalogue of 12,000 stars observed and reduced by the indefatigable astronomer of Hamburg, Mr. Charles Rumker, together with numerous incidental determinations of the places of comparison stars in the 'Astronomische Machrichten.'

"To complete the present account of the state of Stellar Astronomy, mention should be made of two volumes recently published by Mr. Cooper, containing the approximate places arranged in order of Right Ascension of 30,186 stars from the 9th to the 12th magnitude, of which only a very small number had been previously observed. The observations were made with the Markree equatorial, and have been printed at the expense of Her Majesty's Government.

"The determination of differences of Longitude by Galvanic Signals is an astronomical matter of great practical importance. This method, employed first in America, was introduced into England by the Astronomer Royal, and has been applied to the determination in succession of the differences of Longitude between the Greenwich Observatory, and the observatories of Cambridge, Edinburgh, Brussels, and Paris. In the first and last instances results have been published which prove the perfect success and accuracy of the method. Mr. Airy, on recently announcing in the public papers the completion of the operation between the Greenwich and Paris observatories, justly remarks that such an experiment could not have been made without the assistance afforded by commercial enterprise, and that commercial enterprise is in turn honoured by the aid thus rendered to science. In the summer of last year, Professor Encke, following the example set in England, determined successfully, by galvanic signals, the difference of longitude between Berlin and Frankfort-on-the-Maine.

"Galvanism has also been applied to astronomical purposes in other ways. The method of observing transits by the intervention of a galvanic circuit, (just put in practice in America,) in which only sight and touch are employed, and counting is not required, is now in operation at the Greenwich Observatory. It is found to be attended with more labour than the old method, but as it is free from errors to which the other method is liable, it lays claim to general acceptance. At Greenwich, also, the galvanic circuit is most usefully employed in maintaining the movements of distant sympathetic clocks, and in dropping time-signal balls. A ball is dropped every day at Deal by a galvanic current from the Royal Observatory.

"Some anxiety was felt by astronomers respecting the continuation of that most indispensable publication, the 'Astronomische Machrichten,' after the decease of the editor, Mr. Petersen, in February last. This has been dispelled by a recent announcement that the King of Denmark has resolved to maintain the Altona Observatory, in connexion with the editorship of that work. The 'Astronomical Journal,' an American publication of the same kind, undertaken by a young astronomer and mathematician, Mr. Gould, for the especial information of his countrymen, has reached the end of volume three, and will, it is hoped, be continued.

"Generally, it may be said of astronomy, at the present time, that it is prosecuted zealously and extensively, active observations being now more numerous than ever, and that the interests of the science are promoted as well by private enterprise as by the aid of Governments. J. CHALLIS.

"Cambridge Observatory, Sept. 14, 1854."

You will have observed that Professor Challis speaks of the activity of private enterprise in the cause of astronomy: and can I in this place pass over the labours of a Lassells, or the enlightened public spirit of the Corporation of this town, which, stimulated by your visit in the year 1837, has now for some years maintained an excellent and well-provided observatory, under the able management of Mr. Hartnup, who has not only conferred great benefits on the navigation of the place by the regulation of its chronometers, but great honour upon the institution by the general services which he has

rendered to meteorological as well as astronomical science. Mr. Hartnup's improvements in the chronometer, by which the errors arising from variations of temperature are either corrected or estimated and allowed for, have been of the greatest value. In the words of a report of the council of the Royal Astronomical Society, "It is found experimentally, that when a captain will apply the rate thus corrected for temperature, the performance of chronometers is much improved;" and in regard to the importance of the subject to the practical interests of navigation, I would take the liberty of quoting further:—"There are risks at sea, against which no foresight can provide; but loss from defective compasses, or ill-regulated chronometers, should be treated as a crime; since common sense and common care will secure the efficacy of both these instruments. It is to be feared that life and property, to a large amount, are yearly sacrificed for want of a little elementary knowledge, and a small amount of precaution on the part of our seamen, who neglect the safeguards furnished by modern science."

You may remember, that at the period of your last meeting, arrangements with Government were in progress for the construction of a reflecting telescope of four feet aperture, which should bring to bear upon the Nebulæ, and other starry phenomena of the southern hemisphere, a far higher power than that to which they had been submitted by Sir John Herschel. You will regret to hear that, although the estimate was not objected to by the Government, it has not yet been submitted to Parliament. We must make some allowance for the pre-occupations of war.

The labours of your Kew committee are carried on with unabated assiduity and extending usefulness. You will, perhaps, forgive me for taking the liberty of urging upon you the importance of continuing to them an unabated, if not an enlarged support. By giving accuracy to the various implements of observation, the thermometer, the barometer, and the standard weights and measures, they are doing a work of incalculable benefit to science in general, in this and in other countries. At this moment they have in their hands, for verification and adjustment, one thousand thermometers, and fifty barometers, for the navy of the United States, as well as 500 thermometers and 60 barometers for our own Board of Trade, the instruments which are supplied in ordinary commerce being found to be subject to error to an extraordinary degree. At the suggestion of Sir John Herschel they have also undertaken, by the photographic process, to secure a daily record of the appearance of the sun's disc, with a view of ascertaining, by a comparison of the spots upon its surface, their places, size, and forms, whether any relation can be established between their variations and other phenomena. The Council of the Royal Society has supplied the funds, and the instrument is in course of completion. The same beautiful invention, which seems likely to promote the interests of science in many branches at least as much as those of art, is employed, under the able direction of the committee, and of Mr. Welsh, the curator, to record, by a self-acting process, something similar to that of the anemometer, the variations in the earth's magnetism. But I will not pretend to anticipate the results of the careful and extended study of this subject by our able associate, Colonel Sabine, who has been kind enough to promise that we shall hear them from his own mouth in one of our evening meetings. Neither will I anticipate the report of my learned and distinguished predecessor in this chair, Mr. Hopkins, on a subject to which he called the attention of the Association at its last meeting, and on which, in conjunction with Mr. Fairburn and Mr. Joule, he has been engaged in a series of experiments. I allude to the effects of pressure on the temperature of fusion, a problem of great importance, as bearing on the internal condition of our planet.

A report of a committee of the Institute of France, consisting of MM. Lionville, Lamé, and Elie de Beaumont, on the subject of a theory of earthquakes, has been transmitted to me for the use of the Association. From a careful discussion of several thousand of these phenomena, which have been recorded between the years 1801 and 1850, and a comparison of the periods at which they occurred with the position of the moon in relation to the earth, the learned Professor, M. Perrey, of Dijon, would infer that earthquakes may possibly be the result of an action of attraction exercised by that body on the supposed fluid centre of our globe, somewhat similar to that which she exercises on the waters of the ocean, and the report of the committee of the Institute is so far favourable that at their instance the Institute have granted funds to enable the learned professor to continue his researches. You will recollect how often the attention of the Association has been drawn to this subject by the observations of Mr. Milne and of Mr. Mallet, which latter are still going on; and that the accumulating facts are still waiting for a theory to explain them.

On Geology.—I am sorry for the slightness of my acquaintance with so captivating as well as so practical a study. I have nothing to report, save that the increasing scarcity of iron-stone and coal is driving the practical men to have greater respect for a science which enables them to form a very sound conjecture where such minerals are likely to be found, and to come to something like an absolute certainty as to where they are not. When the questions begin to be asked, "Is there a square mile in all the coal-fields of Britain unoccupied by the mines?" "Of its 5000 square miles of visible coal-tract how much remains untouched?" it is time, indeed, to listen to that science which has taught us so successfully in the hands of a Murchison, a Phillips, and others, where further resources for the supply of this, the life of Britain, is to be found.

I need hardly tell you of the services which meteorology may be expected to render to practical life, and perhaps there is no better instance of the value of the accumulation of facts, though in themselves apparently of small importance, and having apparently little connexion with each other.

What apparently can be less subject to rule and law, even to a proverb, than the changeful wind and the treacherous wave? Yet, even here, observation and comparison have done some good work for science and for man, and are about to do more. You are all aware that the American Government have now for some years, at the instance and under the direction of Lieutenant Maury, been collecting from the mercantile vessels of that nation observations of certain phenomena at sea, such as winds, tides, currents and temperature of the ocean; and that the results, digested into charts and books, have already been the means of adding speed and safety to their voyages in an extraordinary degree.

You are aware that application was made to our Government to co-operate in this great work of common benefit to every mercantile nation, and that the subject was brought before Parliament by one of our vice-presidents, Lord Wrottesley, in a speech which he has since published, and which I would commend to every one's perusal, who doubts of the importance of this branch of science to the interests of commerce and navigation. You are perhaps not aware that the Government has agreed to the proposal, and has created a special department for the purpose, in connexion with the Board of Trade, placing it under the management of perhaps the one man best fitted to carry it out with energy and success, my friend Captain Fitzroy, one not less known on the banks of the Mersey by old associations, than on the general fields of maritime science. Conceiving that this was a subject of special interest to the place of our present meeting, and that for such an object it was desirable as publicly and as widely as possible to solicit the co-operation of all who are connected with the commerce of the country, I have asked Captain Fitzroy to communicate to me the present condition of the question; and he has kindly furnished me, not officially, with the following memoranda, which, with your permission, I will read:—

Memorandum I.

The maritime commerce of nations having spread over the world to an unprecedented extent, and competition having arrived at such a point that the value of cargoes, and the profits of enterprise, depend more than ever on the length and nature of voyages, it has become a question of the greatest importance to determine the best tracks for ships to follow, in order to make the quickest as well as the safest passages.

The employment of steamers in such numbers,—the general endeavour to keep as near the *direct* line between two places (the arc of a great circle) as the intervening land, currents, and winds will allow—and the improvements in navigation, now so prevalent, have caused a demand for more precise and readily available information respecting all frequented parts of the oceans.

Not only is greater accuracy of detail required, but much more concentration and arrangement of very valuable, though now scattered information.

Besides which, instrumental errors have vitiated too many results, and have prevented the greater portion of the meteorological observations hitherto made at sea from being considered better than approximations.

"It is one of the chief points of a seaman's duty," said the well-known Basil Hall, "to know where to find a fair wind, and where to fall in with a favourable current:" but, with the means at present accessible, the knowledge of such matters can only be acquired by years of toil and actual experience, excepting only in the greater thoroughfares of the oceans which are well known.

Wind and current charts have been published of late years, chiefly based on the great work of the United States Government, at the suggestion of, and superintended by, Lieutenant Maury; and by studying such charts and directions, navigators have been enabled to shorten their passages materially, in many cases as much as one-fourth, in some one-third of the distance or time previously employed.

Much had been collected and written about the winds and currents, by Rennell, Capper, Reid, Redfield, Thom, Piddington, and others; but general attention was not attracted to the subject, however important to a maritime country, till the publication of Lieut. Maury's admirable observations.

Encouraged by the practical results obtained, and induced by the just arguments of that officer, the principal maritime powers sent duly qualified persons to assist at a conference held at Brussels last year, on the subject of meteorology at sea.

The report of that conference was laid before Parliament, and the first direct result of it was a vote of money for the purchase of instruments and the discussion of observations.

All the valuable meteorological data which have been collected at the Admiralty, and all that can be obtained elsewhere, will be tabulated and discussed in this new department of the Board of Trade, in addition to the continually accruing and more exact data to be furnished in future.

A very large number of ships, chiefly American, are now engaged in observations; stimulated by the advice, and aided by the documents so liberally furnished by the United States Government, at the instance of Lieutenant Maury, whose labours have been incessant.

Not only does that Government offer directions and charts, gratis, to American ships, but also to those of our nation, in accordance with certain easy and just conditions.

In this country, the Government, through the Board of Trade, will supply a certain number of ships which are going on distant voyages with "abstract logs" (or meteorological registers) and instruments, gratis, in order to assist effectively in carrying out this important national undertaking.

In the preface to a late edition of Johnston's 'Wind and Current Charts,' published last June, at Edinburgh, Dr. Buist says,—"It has been shown that Lieutenant Maury's charts and sailing directions have shortened the voyages of American ships by about *a-third*. If the voyages of those to and from India were shortened by no more than

a-tenth, it would secure a saving, in freightage alone, of 250,000*l.* annually.

"Estimating the freights of vessels trading from Europe with distant ports at 20,000,000*l.* a-year, a saving of a tenth would be about 2,000,000*l.*; and every day that is lost in bringing the arrangements for the accomplishment of this into operation, occasions a sacrifice to the shipping interest of about 6000*l.*, without taking any account of the war navies of the world."

It is obvious that, by making a passage in less time, there is not only a saving of expense to the merchant, the ship-owner, and the insurer, but a great diminution of the risk from fatal maladies: as, instead of losing time, if not lives, in unhealthy localities, heavy rains, or calms with oppressive heat, a ship properly navigated may be speeding on her way under favourable circumstances. There is no reason, of an insuperable nature, why every part of the sea should not be known as well as the land, if not indeed better than the land, generally speaking, because more accessible and less varied in character. Changes in the atmosphere, over the ocean, as well as on the land, are so intimately connected with electrical agency (of course including magnetism), that all seamen are interested by such matters, and the facts which they register become valuable to philosophers.

Meteorological information collected at the Board of Trade will be discussed with the twofold object in view, of aiding navigators, or making navigation easier, as well as more certain: and amassing a collection of accurate and well-digested observations for the future use of men of science.

Memorandum II.

As soon as the estimate for meteorological expenses had passed, steps were taken to organise a new branch department at the Board of Trade.

On the 1st of August, Captain Fitzroy was appointed to execute the duties of this new office, referring to Dr. Lyon Playfair, of the department of science and art, and to Admiral Beechey, of the marine department, for such assistance as they could render.

As soon as registers and instruments are ready, and an office prepared, Captain Fitzroy will be assisted by four or five persons, whose duties he will superintend.

It is expected that several ships will be supplied with "abstract logs" (meteorological registers) and instruments in October, and that the office will be in full work next November.

The Admiralty have ordered all the records in the Hydrographical Office to be placed at the disposal of the Board of Trade for a sufficient time. All other documents to which Government has access will be similarly available, and the archives of the India House may likewise be searched. There will be no want of materials, though not such as would have been obtained by using better instruments on a systematic plan.

Captain Fitzroy ventures to think that the *documents* hitherto published by Lieut. Maury present too much *detail* to the seaman's eye; that they have not been adequately condensed; and therefore are not, *practically*, so useful as is generally supposed. His instructions, or sailing directions (the *real* condensed results of his elaborate and indefatigable researches), have effected the *actual* benefits obtained by mariners.

Reflecting on this evil, which increasing information would not tend to diminish, Captain Fitzroy proposes to collect all data, reduced and meaned (or averaged) in a NUMBER of conveniently arranged tabular books, from which, at a subsequent period, diagrams, charts, and "meteorological *dictionaries*," or records, will be compiled, so that, by turning to the latitude and longitude, all information about that locality may be obtained at once, and distinctly.

I cannot doubt that the spirited merchants and shipowners of England will not be slow to follow the example of their brethren in the United States, and will lend their heartiest assistance to a work so useful. Great facilities will be afforded them in the way of instruments of tested accuracy; and the increasing number of scientific seamen, which is resulting from the local institutions of education, and the system of examination of masters and mates for certificates, will furnish them with observers in every part of the ocean fit to be entrusted with such instruments and skilful in their use. Let not the practical man think lightly of such matters when he is reminded of the great services of the barometer in forewarning of the coming storm; that the ascertained temperature of the sea which his ship is traversing will inform her master whether he is engaged in one current or another, and announce to him the approach of the dangerous iceberg when it is not discoverable by any other means.

I will now, with your permission, proceed to the consideration of some other departments of our work, such as geography, ethnography, and statistics, which are more connected with my own pursuits, which, affected as they are by the character of man, the uncertainties of his will, and the accidents of his physical and moral nature, and thus being less the subjects of direct and pure experiment, seem at first sight to be hardly reducible to those fixed laws which it is the object of science to investigate and ascertain. For these reasons, indeed, among others, these branches of study formed at first no part of the scheme of the British Association, and there was some doubt about their subsequent admission.

Nevertheless, I rejoice that they were so admitted. The apprehension that they must introduce the spirit of party into our proceedings has been most honourably disappointed; and as one, who, in the capacity of a member of the Legislature, has to act from time to time on the subject of some of their inquiries, I cannot but express my gratitude for the assistance which they have afforded, both by informing and forming the public mind on many important questions; and, above all, for the lesson they have taught on the importance of testing every theory by a patient collection and impartial discussion of the facts; in a word, for having imparted the spirit of science into what, in the largest sense of the word, may be called politics, instead of importing the spirit of politics in its narrower sense into science.

What is more important than to rescue questions of this nature, such as finance and political economy, for instance, in some degree at least, from the domain of party contention? And how can we better contribute to that desirable result, than by discussing the carefully collected facts in a scientific spirit on an arena within which no party passion is excited, no party allegiance is acknowledged, no party victory has to be lost or won, and when men are at liberty to convince and be convinced without risking a charge of treachery or a change of ministry as the consequence? But, in fact, these studies could not fairly have been excluded from our peripatetic university of science.

Who shall separate political altogether from the influences of physical geography, or ethnology from physiology, or the destinies of man upon this globe from the study of his physical nature? By its employment of the doctrine of probabilities, one branch of statistics is brought into immediate contact with the higher mathematics, and the actuary is thus enabled to extract certainty in the gross out of uncertainty in the detail, and to provide man with the means of securing himself against some of the worst contingencies to which his life and property are exposed. In fact, statistics themselves are the introduction of the principle of induction into the investigation of the affairs of human life—an operation which requires the exercise of at least the same philosophical qualities as other sciences. It is not enough in any case merely to collect facts and reduce them into a tabular form. They must be analysed as well as compared; the accompanying circumstances must be studied, (which is more difficult in moral than in material investigations,) that we may be sure that we are (that is to say, in reality calling the same things by the same names) treating of the same facts under the same circumstances; and all disturbing influences must be carefully eliminated, before any such pure experiment can be got at, as can fairly be considered to have established a satisfactory conclusion. In some cases this is easier than in others. In regard to the probabilities of life or health, for instance, there are, at least, no passions or prejudices, no private interests at work, to interfere with the faithful accumulation of the facts; and if they be numerous enough, it might be supposed that their number would be a sufficient protection against the effect of any partial disturbances. But even here, caution, and special as well as extensive knowledge, are required. There are disturbing influences even here—habits of life, nature of employment, immigration or emigration, ignorance or mis-statement of age, local epidemics, &c., which leave sources of error in even the most extended investigations. Still results are attained, errors are more and more carefully watched against, and allowed for, or excluded, and more and more of certainty is gradually introduced. And here I should not omit to notice the valuable services of the Society of Actuaries, not long ago established, and who are represented in our Statistical Section. They discuss all questions to which the science of probability can be applied; and that circle is constantly extending. Assurance in all its branches, annuities, reversionary interests, the laws of population, mortality, and sickness; they publish Transactions, and, what is of the greatest importance in this, as indeed of any branch of inductive science, they hold an extensive correspondence with foreign countries. In fact, they are doing for the contingencies of human life, and for materials apparently as uncertain, something like what meteorology is doing for the winds and waves.

What shall I say to the statistics of crime, of education, of pauperism, of charity, at once and reciprocally the effect and the cause of that increasing attention to the condition of the people, which so favourably distinguishes the present age? Who can look at the mere surface of society, transparently betraying the abysses which yawn beneath, and not desire to know something of their secrets, to throw in the moral drag, and to bring to the light of day some of the phenomena, the monstrous forms of misery and vice which it holds within its dark recesses; and who can look at these things, no longer matter of conjecture, but ascertained, classed, and tabled, without having the desire awakened or strengthened to do something towards remedying the evils thus revealed, and without feeling himself guided and assisted towards a remedy? Yet here, more than in other cases, should a man suspect himself; here should he guard himself against hasty conclusions, drawn from the first appearance of the results; for here are disturbing influences most busily at work, not only from without, but from within; not only in the nature of the facts themselves, but in the feelings, passions, prejudices, habits, and moral constitution of the observer.

Still, the tabling of the facts is of infinite importance. If they disturb, as they are sure to do, some feeling, some prejudice, some theory, some conviction, it will be felt that any how the facts have to be accounted for, further investigation will follow; and if it appear that no correction is required, the truth will be established, and the hostile theory will, sooner or later, give way and disappear. In these things it is, of course, more than usually important that the facts to be selected for collection should be such as are, in their own nature and under the circumstances, likely to be ascertained correctly, and that the business of collection should be in the hands of those who have no bias to do it otherwise than fairly, no interest in the result: and this was, I believe, kept studiously in view by those who had the management of our great statistical work, the recent census of our own country, which we are still studying; but, whether they were successful or not, in this respect, has already become matter of discussion.

The work itself is, undoubtedly, one of the greatest monuments that have ever been presented to a nation, as a record of its own constituent element and condition; compiled and commented on with singular industry, judgment, acuteness, and

impartiality,—the 'Domesday-book' of the *people* of England, as the great volume of the Conqueror was of its *surface*.

Nor can I, while speaking of statistics, avoid referring to the Statistical Congress which took place at Brussels about this time last year; which had mainly for its object to produce uniformity among different nations in the selection of the facts which they should record, and in the manner of recording them; without which, indeed, no satisfactory comparisons can be established, no results can safely be deduced. To bring about such an uniformity absolutely is, I am afraid, hopeless; inasmuch as the grounds of difference are, in many cases, so deeply imbedded in the laws, the institutions, and the habits of the different countries, that no hammer of the statist is likely to remove them.

To understand, however, the points of difference, even if they are not removed, is in itself one great step towards the object. It at least prevents false conclusions, if it does not fully provide the means of establishing the true ones. It gets rid of sources of error, even if it fail of giving the full means of ascertaining truth. Take, for instance, the case of criminal statistics. We wish to ascertain the comparative prevalence of different crimes, either at different times or in different countries. For this purpose must we not know under what heads the jurists and statists of the times or countries to be compared array the various offences which are recorded; with what amounts of penalty they were visited; and with what rigour, from time to time, the penalties were enforced.

That which is called manslaughter in one country, and assassination in another, is called murder in a third. That which in one country is punished with death, in another is visited by imprisonment. The bankruptcy which in one country is a crime, in another is a civil offence. The juvenile offences which in one country are punished by imprisonment, and swell the criminal calendar, in another are treated, as they should in many cases be, only as an object of compassion and correction, take no place in the criminal calendar at all.

Indeed, it is one of the difficulties which beset a large proportion of these investigations, whether into morals, health, education, or legislation, and which must always distinguish them from those which deal either with matter or defined abstractions, that, in using the same terms, we are often uncertain whether we mean the same thing; whether, in fact, when we are using the same denominations, the same weights and measures are really employed. Such conferences, however, as those of Brussels tend much to limit the extent of error.

Among the objects which may best occupy the attention of the Statistical Section, at the present moment, will be the discussion of a decimal coinage, and the statistics of agricultural produce. It is important, in regard to both, that by previous sifting and discussion not only the best conclusion should be arrived at, but the subject should be so familiarized to general apprehension as to secure the widest co-operation. In regard to a change in the coinage, the interests and feelings of the lower classes must be especially consulted; and, with this view, without expressing any ultimate opinion, I would recommend to those who are considering the question, the perusal of a pamphlet, full of important matter, by the late Mr. Laurie, the work of the last hours of a man of eminent knowledge and virtue, which he had hoped to be able to communicate in person, as a paper, to the present meeting. With regard to the statistics of agriculture, the main object is to procure such a knowledge of the facts as shall guide the operations of the consumer and the merchant. I would suggest that they should be taken and published at two periods of the year, once in the spring, recording the extent of soil devoted to each kind of grain—a fact easily ascertained; the second time as soon as the harvest is concluded; announcing the amount of the crop, as ascertained on several specimen fields under different circumstances of soil and climate, and applying it in due proportion as a multiple to the acreage already published. A really accurate census of the harvest is, I believe, impracticable, at least within the period which would alone make it valuable for present use: and the approximation which I have suggested would, I conceive, be adequate to the purpose.

In regard to geography and ethnography there are few sections, I believe, which have more general interest, and none, I imagine, which would be more attractive here, where every new discovery is connected with the material interests of the place, a new source of raw material, or a new destination for finished work; and where every new communication, established and reported, is another channel for the extension of that commerce, which, bursting from the channels of the Mersey, permeates and percolates every creek and cranny of the known world.

The great navigations which are opening up the heart of the South American continent, by the Paraguay, the Amazon, and the Orinoco, that are traversing and uniting the colonies of Victoria and South Australia by the River Murray; the projected exploration of North Australia, which, I am sorry to say, is as yet only a project, and may require some of the fostering warmth of the Association to bring it into actual existence; the wonderful discoveries in South Africa by Livingston and Anderson, (I am happy to say that Mr. Anderson is here to tell his own story,) and the explorations of Central Africa by Barth and Vogel; the pictures given us by Captain Erskine and others of the condition of the islanders of the South Pacific, passing in every stage of transition from the lowest barbarism to a fitness for the highest European and Christian culture;—these, and a hundred other topics, awaken an ever new interest in the mind of the philosopher and statesman, in the feelings of the Christian and the lover of his kind. What new fields for science! What new openings for wealth and power! What new opportunities for good! How important that those who issue from this great emporium of modern commerce, this more than Tyre of modern times, should know how to turn them to advantage! Surely your periodical visits here, with their kindling, stimulating, I was going to say infectious, influences, are no mean instrument for such a purpose.

It cannot be for nothing that the heroes of every branch of science are assembled from many countries within these walls, and are brought into personal contact with the most enterprising and public-spirited of our merchants: that in the language of my distinguished predecessor in this chair, slightly adapted, "the counting-house is thus brought into juxtaposition with the laboratory and the study." Commerce will more than ever be auxiliary to science—and science more than ever the helpmate of commerce—and a still further impulse will be given to those beneficial influences, which, in spite of some painful, though necessary, interruption occasioned by our present state of war, a good Providence is so visibly extending over the whole habitable globe.

It is happily becoming every year less and less necessary to press these things on public notice. In an age of gas and steam, of steam-engines and steam-boats, of railroads and telegraphs, and photographs, the importance of science is no longer questioned. It is a truism, a common-place. We are far from the foundation-days of the Royal Society, when, in spite of the example of the monarch, their proceedings were the ridicule of the court; and even the immortal Butler thought the labours of a Wallis, a Sydenham, a Harvey, a Hooke, or a Newton, fit subjects for his wit.

It is still, however, worth inquiring whether sufficient facilities for education in science exist or are in progress in our country; and whether Government or other important bodies provide sufficient encouragement and reward for its prosecution.

Now, in regard to the former, there can be no doubt that, until a very late period, the assistances to scientific education furnished in this country, either by educational institutions or the State, were very slight, and totally unworthy of the object or the nation. Look at the lower schools: until very lately, nothing but reading and writing, and hardly that, was ever offered to the labouring classes. Look at the grammar schools. They were limited to the acquisition of a small modicum of Greek and Latin, often not even of arithmetic. The middle classes of society, those who did not send their children to the universities, had no opportunity of acquiring any, the slightest, knowledge of science, whether practical or abstract, from the untested, ill-respected teachers at private commercial schools, or from the casual visit of an itinerant lecturer, with his travelling apparatus. But what did the universities? My own university, Oxford, to which I acknowledge in other respects the highest obligations, did little for physical science. True, that the study of mathematics, as an exercise and training of the understanding, received its honours there, though the genius of the place has never yet been favourable to the pursuit. True, that until comparatively a recent period, the honours of the sister university were exclusively, or nearly so, confined to the same science, and that the school of Newton has seldom been without names not unworthy of such a founder. But even there the mathematics were still too exclusively regarded as a mere training of the understanding, and not as an instrument for the discovery of further truth; and the fair tree of science, planted within the academic courts, though healthy and vigorous, was somewhat barren of fresh fruit. Such as it had been in the time of Newton, such in a great degree, for a century and a-half at least, it remained. But to other than mathematical science, I believe I may say, at either university, encouragement there was little or none. If now and then a professor was to be found whose title promised something of the kind, on approaching him you would find that his existence was little more than nominal; that his courses were not frequented, even if they were offered, or if at all, only by those who were considered rather as the idle men; because success in them was not only no advantage in the university career, but, by the time which they abstracted from the rewarded studies of the place, was a positive loss and obstruction in the way of the honours and emoluments of the place. So that it might fairly be said, that if any advance was made in such sciences, at least in the universities of England, it was rather in spite of than by reason of the system pursued in those otherwise useful, noble, and magnificent institutions. In Scotland, indeed, the extended study of medicine, connected as it is with so many other branches of science, together with the less amount of artificial forcing into other studies, led naturally to the pursuit of physical science, and a Black and a Gregory, a Leslie and a Playfair, had no rival contemporary names at Oxford and Cambridge. The names of a Whewell and a Herschel, an Airy, a Challis, and a Sedgwick, of a Powell, and Daubeny, and a Buckland,—alas, that he is only a name now,—would forbid the assertion in regard to more recent times. But what, meanwhile, was the State doing? That State which, with its limited population and territory, depends not upon the number of its people, but upon the individual value of each man; not upon the number of its acres, but upon their skilful cultivation; not even upon the resources of its surface, however well developed, but upon the mines which lurk beneath it; not even upon its mines, but upon all the various and varying manufactures which these mines give extraordinary facilities for carrying on; not even on these manufactures, but on the extended commerce and navigation which are necessary to provide the materials to draw them forth from the remotest corners of the earth, and to send them back with speed, safety, and economy, in another form and combination, often to the very spots from which they were derived; in a word, dependent for the full development of its agriculture, its mining industry, its manufactures, and its commerce, upon the widest extension and the fullest cultivation of chemistry, of natural history, of mineralogy, of geology, of astronomy, of meteorology, and mechanics. What did the State do for these things? Why, absolutely nothing. There was for a time a Board of Longitude, which, instead

of enlarging and improving it, it abolished; a Board of Agriculture, which it dropped; a School of Naval Architecture, which, at the bidding of a narrow economy, and at the instance of practical men, it abolished when the fruits were ripening; a School of Naval Instruction at Portsmouth, which it dropped. Here and there still survives a grant from the bounty of an individual monarch, grudgingly adopted by the State, of 10*l.* for a Professor of Natural Philosophy at Aberdeen, or fifty guineas for a similar professor at St. Andrew's, or 150*l.* to one at Glasgow, or 30*l.* to one at Edinburgh, and, more recently, grants of 100*l.* a-year each to four or five professors in each of the old universities of England. This is, as far as I can discover, all that the magnificent State of Britain did, until recently, for that science on which her wealth—and if her wealth, her power—and if her power, her very existence—is dependent. True, one advantage we have enjoyed, which is indeed worth all the organised instruction in the world which despotism could offer, "although no science, fairly worth the seven," —we have enjoyed security for life and property; the free exercise of thought and action; religion, which does not chain the energies of mind and character, but stimulates and exercises, while it regulates and directs them; and though last, not least, a country to be proud of, and to be fond of, and which every one desires to bequeath to his posterity better, more beautiful and stronger, than he found it. And it is by reason of this indirect influence on national character, that, in spite of the more than want of encouragement of science of which our Government has been guilty, England has yet to boast of an array of men of science, of workers and discoverers, if not always of teachers, such as she need not be ashamed to show by the side of any other country, whatever stimulants or encouragements its Government may have supplied.

But, because so much has been done by the spontaneous vigour of the people's character and of their political and religious institutions, without special assistance or encouragement, does it follow that still more would not be done with those aids? Such, happily, is not the opinion of the present day,—not the opinion of the Legislature,—not that of our universities themselves. We do not believe that such difficulties are an advantage even to the vigour of the plant, still less to its extended propagation; and accordingly individuals, colleges, and I hope Governments, are now heartily and honestly engaged in repairing the defect of centuries, and not only in promoting the general development of intellect, but especially in directing it to the fields of science. And happily the facilities for the purpose already at hand are enormous. The Chancellor of the Exchequer need not apprehend excessive demands upon his treasury to meet the case; though, if they were necessary, I believe he is too sensible a man to withhold them; but such demands are not required. The encouragements and assistances already given by the State to the education of the people, in various shapes; the superior class of trained and examined teachers, who are spreading over the land, and whose training has in no small degree been in physical science; the books provided for early education by our societies and by individual enterprise, having the same character; the every-day more and more acknowledged connexion between agriculture and science, showing itself in such papers as enrich the pages of the journal of the Royal Agricultural Society; the establishment of the Department of Science with its School of Mines under the Board of Trade: the improvement which is to be expected under the action of the charity commissioners in the system of our old grammar schools; the spontaneous action of our old universities, not superseded, but facilitated and stimulated by parliamentary interposition;—these and such like changes, which are taking place, partly within the bosom of society itself, and partly by the action of Government, will shortly provide such means of scientific education, although not systematized with the exactness of continental organization, as will, after our rough English fashion, adequately provide for all our wants in that respect, and give us no cause to lament over any considerable deficiencies in practical result.

But will there be encouragement to make use of these facilities? Are there rewards in prospect, whether of direct emolument or social consideration, which will induce men "to wear out nights, and live laborious days," in a service which has hitherto, in the world's eye at least, appeared often to be ill requited? Now, the real stimulant to science has at all times been the delights of the pursuit itself, and the consciousness of the great services rendered to humanity by every conquest within the domain of truth; but still these questions may fairly demand an answer. To the questions of pecuniary rewards, I will presently advert, they have certainly been miserably inadequate; but in regard to social consideration, I think there has existed some misunderstanding. It has been often asserted, and made the subject of lamentation or complaint, that men of science do not enjoy in this free country the consideration which they do in some countries less favoured otherwise in their institutions than ourselves. Now, if by this it is intended to express, that men of science are not made Knights of the Garter, or peers of parliament; that they are not often met with in the hearts of wealth and fashion; that they are not called into the councils of their Sovereign, or sent to represent her in foreign courts, I admit the fact; but, then, I doubt whether these are the natural or fitting objects of ambition to the scientific man: and, if it is intended by the assertion that they are not, as a class or individuals, appreciated by their fellow-citizens for their genius and honoured for their services, I cannot so fully admit the fact. I would ask any of those whose presence adorns this meeting, do they not find that their names are a passport into any society, the proudest in the land? Whose doors, that are worth entering, are not open to them? There are certain advantages, superficially considered, which will always belong to mere wealth or power; but are they such as the lover of science can bring himself to envy or desire? Wherever he is known, he is honoured—witness in themselves the meetings of this great Association, and of other kindred bodies, who visit, from time to time, different quarters of our land—where is their presence not hailed, not struggled for? Where is it not the endeavour of rank and wealth on every such occasion to do honour to itself by showing honour generally and personally to those who, by their successful pursuit of science, have done honour to our own or foreign lands? If, indeed, there be anything yet wanting in this respect, either in our people or our Government, the progress of education in science, to which I have before alluded, will soon supply it when the various classes of our population, in their schools, their mechanics' institutes, and, not least, in their colleges, are themselves less ignorant of science—when they have learned to appreciate its value by personal acquaintance with its truths, there is no fear that those at whose feet they have sat, whose names are familiar to them in association with so valuable an acquisition, will not receive all due honour and regard. Whether or to what extent the result will be a greater association of science with political position, and how far such association would be advantageous to either politics or science, is another question. The experience of foreign countries on this head can hardly be held to be quite satisfactory. I am not sure that their men of science have been very successful politicians, or that science itself has profited by the union. Public life, more than science, is a jealous mistress, and does not well tolerate a known devotion to any other pursuit. It has, besides, a science of its own, essential to it, especially in a free country,—the knowledge of men; and this is not always the special gift of men of science, who deal less with men than with things and thoughts; and I am not sure that the qualities which fit a man for success in the one pursuit, are peculiarly advantageous to him in the other. This, however, is certain, that those who administer the affairs of this country ought at least (I do not think as yet they do) to know enough of science to appreciate its value, and to be acquainted with its wants and with its bearings on the interests of society; but such knowledge, I cannot doubt, will soon become the common appanage of all well-educated men; and when it is so, as I said before, whatever either in the position of science, or of men of science, is still wanting, will soon be supplied.

To accelerate, however, this process, I would gladly see a more direct communication established between the organs of power and scientific bodies. Something in this respect has already been done by the Parliamentary Committee of this Association, and the results have been already seen in the increased attention of Parliament and Government to scientific objects. Still, however, in regard to science I must admit that there is one great deficiency. For often may it be said of science, as it was said satirically of virtue by the poet, *laudatur et alget*,—It is praised and starves. The man of science may not desire to live luxuriously; he may not, nor ought he desire to rival his neighbours in the follies of equipage and ostentation, which are often, indeed, rather a burden imposed by the customs of society than an advantage or even a gratification to the parties themselves; but he must live, and for the sake of science itself he ought to be able to live, free from those anxious cares for the present and the future, or from the calls of a profession, which often beset and burden his laborious career. Why was our Dalton compelled to waste the powers of such an intellect on private teaching? As a teacher, a physician, or a clergyman, or more rarely as a partner in a profitable patent, such a man may earn a competence, and give to science the hours which can be spared from his other avocations; and it is, indeed, astonishing what results have been the produce of these leavings of a laborious life, these leisure hours, if so they may be called, of men who are engaged in arduous duties of another kind. But this ought not to be; and it will not long be, I am confident. It must give way before the extended cultivation of science itself. The means of occupation in connexion with our schools and our colleges, and our examinations, will increase; and I cannot but hope that a grateful country will insist upon her benefactors in science receiving a more liberal share of her bounty than has hitherto been allotted them. If I recollect right, out of the 1200*l.* which are annually appropriated in pensions to the successful cultivators of science, literature, and art, a poor pension of 50*l.* is all that last year fell to the lot of science; and in former years the disproportion has often been little less remarkable. I do not grudge their share to literature and art; but I confess I cannot but consider that the labours of science are, at least, of equal value to a nation's welfare; that they have, at least, an equal claim upon her gratitude, and I am sure that they stand in no less need of encouragement and support.

Nor have I any fear that the study of science should ever become too exclusive,—that is, should make us too material, that it should overgrow and smother those more ethical, more elevating, influences, which are supposed to grow from the pursuit of literature and art.

In the first place, the demands of science upon the patient and laborious exercise of thought are too heavy, too severe, to make it likely that it should ever become the favourite study of the many. In art and literature the mind of the student is often comparatively passive, in a state of almost passive enjoyment of the banquet prepared for him by others: in those of science the student must work hard for his intellectual fare. He cannot throw up his oars,

> And let his little bark attendant sail,
> Pursue the triumph and partake the gale,

but he must tug at the oar himself, and take his full share in the labour by which his progress is to be made.

Nor indeed, when I read the works of a Whewell, and a Herschel, and a Brewster, a Hugh Miller, or a Sedgwick, and a hundred others, the glory of our days, can I see any reason for apprehending that the study of science deprives the mind of imagination, the style of grace and beauty, or

the character of its moral and religious tone, its elevation and refinement.

And now, ladies and gentlemen, I have done.

Once more assuming for a moment the character of a representative of this great town, I welcome you, the British Association, a second time to Liverpool. It is right that you and Liverpool should have frequent meetings, and should cultivate an intimate acquaintance. There is no place which can do more for science if she pleases; none has opportunities so extensive of becoming, by her ships and her commercial agencies, by her enterprising spirit and her connexion with every soil and climate, the missionary of science,—perhaps I should rather say, the importer of the raw material of facts and observations, the exporter of the manufactured results arising from their scientific discussion. There is no town which owes more to science; without science can her vessels stir out of sight of land, or walk the waters independent of wind or tide? Without science would they have docks to shelter them, railroads to bring their produce to the docks, telegraphs to announce their movements, manufactures to freight them to distant lands? I do not believe that Liverpool is insensible to her obligations. This magnificent reception is one evidence of the feeling,—but a still better is to be found in her liberal support to such institutions as the Public Libraries and Museums, as her Collegiate Institution and her Mechanics' Institute, and, above all, to her magnificent Observatory.

Again I welcome the British Association for the Promotion of Science to the walls of Liverpool, fully assured as I am of the great benefits, direct and indirect, which their presence will confer upon the town, and of the deep sense which I know the inhabitants entertain of the honour conferred upon them by this repeated visit.

At the conclusion of the President's address, the audience were entertained with an admirable speech from the Earl of Derby, in proposing a vote of thanks. The Oxford Chancellor confessed that he belonged to a period when science was little cultivated as a branch of education, and that in scientific matters he must confess himself utterly ignorant; and Sir Charles Lyell, in seconding the vote of thanks to the President, took occasion to remark that the Legislature deserved the warmest thanks of scientific men for the improvements that had been lately effected in scientific education in the University of Oxford.

DR. LANDSBOROUGH, A.L.S.

THE cholera has deprived us of another respected and accomplished naturalist, whose loss, though at the ripe age of seventy-three, many will deplore, on account of his never-ceasing activity of mind and kindly habit of correspondence. David Landsborough, of Saltcoats, Ayrshire, the well-known explorer of the minuter animal and vegetable inhabitants of the sea, and delightful exponent of their characters and habits, was seized on Tuesday morning of last week with the prevailing epidemic, and he was summoned the same evening into the presence of the divine Master whose faithful minister he was.

"Dr. Landsborough," says the 'Scottish Guardian,' in a feelingly written tribute to his memory, "first acquired celebrity in the scientific world by occasional notices from his pen of the natural history of his former parish of Stevenston, and the shores of Ardrossan, to which he at length stood in the relation which Gilbert White occupied to his parish of Selborne. The natural history of the district became his study in the intervals of professional duty, to which he ever devoted his chief attention and his best affections. All branches of the science passed under his scrutiny, and he showed an equal aptitude for all. He studied the plants, flowering and cryptogamic; the shells, land and marine; and evolved from the coal-fields fresh accessions to fossil botany, of which his discovery of *Lyginodendron Landsburgii* (named by himself, with characteristic humour, 'Noah's creel'), is a curious example. But it was more especially to the algæ of Ardrossan and Arran that he devoted of late years the leisure saved from his pastoral avocations; and the pages of Dr. Harvey's 'Phycologia Britannica' bear ample testimony to the industry and success with which he prosecuted his researches upon these productive shores. Dr. Harvey has acknowledged his contributions by giving his name to a little alga—viz., *Ectocarpus Landsburgii*, which the Doctor describes in his 'Popular History of British Sea-Weeds' as not having 'much beauty to recommend it,' adding, 'but it is a little curiosity. Like the Scotch thistle, it is armed at all points, and says as plainly as a hundred drawn dirks can say it, 'Wha daur meddle wi' me?'' In like manner his friend, Dr. Johnston of Berwick, honoured his researches in a kindred department of study, by naming a zoophyte after him—*Lepralia Landsborovii*. The meekness with which he bore his scientific honours, and the pious aim which he never for a moment lost sight of in prosecuting his scientific pursuits, are pleasantly illustrated in his notice of the Lepralia in question, in his 'Popular History of British Zoophytes:'—'Dr. Johnston,' says he, 'in doing me the honour of dedicating this *Lepralia* specifically to me, accompanies the compliment with language dictated by all the partiality of friendship. '*Laudari a laudato*' would be very sweet, were there not a depressing sense of great shortcomings. When on another occasion a friend had given the specific name of *Landsburgii* to a shell, I said jestingly to the friend who told me of it, 'Is it possible to sail far down the stream of time in a scallop?' 'Yes,' was the reply, 'the name that is written on Nature will be had in remembrance when sceptres are broken, and thrones overturned, and dynasties have passed away.' The humble name in question (he adds) is so faintly inscribed, that the rough wave of time will soon totally efface it; but there is a higher and more permanent honour that we should all supremely court—that our names be written in the book of life; then, when the sun, and the moon, and the stars are darkened, we shall shine with the brightness of the firmament for ever and ever.' It was thus that Dr. Landsborough ever blended the modesty of true science with the piety of true religion. His scientific writings abound with moral and religious reflections; and we have occasion to know that when the publisher of one of his volumes objected to the introduction of scriptural and evangelical lessons in a book devoted to natural science, the author insisted, as a *sine qua non* to his proceeding with the work, on his being left at unrestricted liberty to write on science in his proper character of a Christian minister. To the 'Scottish Christian Herald,' about sixteen years ago, he contributed numerous scientific and religious papers, the latter including several biographies of parishioners, afterwards published separately under the title of 'Ayrshire Sketches,' and in which we have some incidental glimpses of the devoted and affectionate manner in which he discharged his pastoral duties. The 'Christian Treasury' afterwards became the repository of many agreeable papers on plants and animals, which he subsequently embodied in his popular volume on 'Arran,' his favourite resort, and celebrated by him both in poetry and prose. Of all his writings, the Arran sketches convey the most vivid idea of the author's character, habits, and varied attainments. To accompany him in a summer excursion to that delightful island, and ply the dredge in the shelly depths of Lamlash Bay, or explore the rock-pools betwixt Invercloy and Clachland Point, was a treat of no common order; and those who have enjoyed it will not soon forget the Doctor's unaffected pleasure in expatiating, for the instruction of his companions, on the treasures won from the deep; or the genial enthusiasm with which he scanned each successive hawl of the full-charged dredge, 'reaping the harvest of a quiet eye.' The children of the manse were early trained to neat-handedness in preserving sea-weeds for the herbarium, and the collections which have issued from the happy home at Stevenston, Rockvale, and latterly at Saltcoats, have been admired by thousands for their picturesque beauty, and the sale of hundreds of elegant volumes has for years past contributed bountifully to church and school. A large proportion of the Doctor's correspondence consisted in the interchange and distribution of sea-weeds, zoophytes, and shells, specimens of which he sent broad and wide over the kingdom with no slack hand. How will his correspondents miss his familiar letters inclosing the last-found alga—his friends, the cheerful and benignant smile which welcomed them to his home and heart."

In reference to the remark in the above quotation from the 'Scottish Guardian,' that the publisher of one of Dr. Landsborough's volumes "objected to the introduction of scriptural and evangelical lessons in a book devoted to natural science," we may be allowed to explain that it was only from the excess of the good pastor's fervour in preaching the redemption of our blessed Lord, while writing on the natural history of the zoophytes, that the publisher suggested the cancelling of a certain paragraph. Though not entirely agreeing with the author's religious opinions, or the seeming obtrusiveness of their reiteration, he appreciated his zeal in the cause with feelings of the sincerest esteem, and will yield to no one in his admiration of the honest firmness with which the worthy Disruption minister "insisted" upon the paragraph remaining.

TOPICS OF THE WEEK.

MR. ALBERT SMITH concluded his 838th Ascent of Mont Blanc on Saturday last, with an address highly characteristic of the honest drollery and unaffected good humour which have made him such a favourite with the public. Alluding to the improved condition and better repute of the Egyptian Hall as a place of entertainment, he said—"When I first took the Egyptian Hall I found it a very dirty place indeed. The accumulated rubbish of Laplanders, Egyptian mummies, overland emigrants to California, Holy Land Bedouins, electro-biologists, and Ojibbeways, had something Augean in its magnitude; and the cellars below formed a perfect mausoleum of dead panoramas. I do not know how many thousand miles of countries are lying beneath your feet. I have already explored there the whole of the Rhine from the Alps to Rotterdam; the entire voyage from Liverpool to New York; the Dardanelles, Constantinople, and the Bosphorus; the route of the Overland Mail *vid* Marseilles; and last week only, with the assistance of a spirited corps of six men, I took Sebastopol, and sent it off in a van to the North Western Railway. Well, ladies and gentlemen, the hall was got into something like order, and then I determined on a little reform in the audience portion of the room, which, I believe, has had no small share in bringing about the result. In the first place, I abolished everything like fees to the attendants. Had I detected one taking anything from anybody, he would have been immediately dismissed. I consider, at a place of public entertainment, you are no more called upon to give anything to the person whose business it is to show you to the best available seat, than you have to the servant who gives you a chair when you call upon a friend. I then thought that offering the programmes might be an excuse for receiving sixpence now and then, so, to shield you from this chance, I directed that the programmes should lie about upon the seats, so that you might take them up yourselves—as many as you wished for. That this was for your advantage you will see, when I find that since the entertainment commenced nearly 300,000 persons have attended it. Had one-half of these taken bills, at one penny each, the profits would have been 625*l*. I next set my face entirely against the extortion—I can give it no milder name—of charging one shilling extra for a place taken beforehand. So much do I hold a contrary opinion that, before Mont Blanc commenced, I had some thoughts of making the price of places taken in advance sixpence less than those paid for at the doors, as one has a book cheaper by subscribing to it than by buying it at

a bookseller's; because a great deal of trouble could be saved, and room more conveniently arranged for the comfort of an audience, when it was known how many were expected. The box-bookeeper was equally your servant as mine, in common with all the other attendants, paid a salary to be here for your own especial accommodation. Again, ladies and gentlemen, I endeavoured to keep the entertainment within such limits of time that amusement might not gradually flag into bore; and I fixed the time of commencement at an hour possibly better suited to the habits of 1854 than of a century ago. I put a clock before you that you might be your own timekeepers; and the few minutes of interval between the parts has been most punctually observed. And I hope you will allow me to say in addition, so anxious was I for this regularity to be observed, that during 838 representations, under every circumstance of health and spirits and business, I have never abridged the lecture of an important sentence, nor ever been half a minute behind my time. I have now closed the season, not because my friends had deserted me, but honestly for a short holiday. The pictures were getting worn out; the seats and carpets were getting worn out; and I was nearly worn out myself. I will start immediately for Chamouni, to see what fresh subjects of amusement or interest may be collected on the route, which will be entirely changed. Instead of the Paris and Strasburg line, I shall convey you to Switzerland by Amsterdam, Holland, and the Rhine, and thence by Berne to Geneva; and we shall stop, on our return, at Lyons and Paris. (Mr. Smith here read several communications supposed to be from Mrs. Seymour, Mr. Pringle, Mr. Parker, and other characters of the entertainment.) And now, ladies and gentlemen, until the end of November, wishing you all the health and good spirits that I hope to enjoy myself, I bid you, most respectfully and gratefully, good bye." The idea of charging less for places taken beforehand instead of charging more, reminds us of the system in which the Horticultural Society issue tickets for their Flower Shows—namely, three and sixpence up to a certain date, five shillings after that date to the day of admission, and seven shillings on the day of admission. We commend this idea in all sincerity to the managers of theatres. There are so many people who propose attending particular performances, and when the day arrives are prevented or prove indifferent to going, that an arrangement of this kind would, we have little doubt, be attended with gain.

Death has been rather busy within the last few days amongst the *literati* of the Continent. At Paris, it has stricken down M. de Mirbel, a distinguished *savan*, and professor at the Jardin des Plantes; M. Dufey, an antiquary and historian of note; M. Varner, a clever dramatist, who *collaborated* with Scribe in several of his crack pieces; M. Ancelot, a member of the Académie Française, author of sundry tragedies, and amongst them *Louis XI.*, *Le Marie du Palais*, *Elisabeth d'Angleterre*, of a poem called *Marie de Brabant*, and of numerous vaudevilles—and who, besides, had the honour of negotiating the preliminaries of several of the treaties for the suppression of literary piracy into which France, to her honour, has recently entered; and, lastly, the fell monster has carried off the once famous Ladvocat, the bookseller and publisher—a man who was at the head of the publishing trade in France from 1815 to 1830—who was a veritable Mecænas to authors,—who had the honour of presenting to the world, or publishing for, Lamartine, Chateaubriand, Hugo, Dumas, and other of the great literary celebrities of modern France—who was the friend of ministers and ambassadors—who at one time counted his wealth by millions (francs), and who rioted in more than princely luxury—who finally, by imprudent speculations, lost all he had, and after living for years in profound obscurity, died in a hospital, leaving his widow penniless and friendless, and compelled to make an appeal to the public for charity! In Germany, death has carried off Canon Schmidt, who is so widely known by his charming writings for children; and at Rome, Cardinal Angelo Mai, distinguished by his discovery in the library of the Vatican of some palimpsests, containing the lost portions of Cicero's famous 'Treatise on the Commonwealth,' a loss which had always been deplored by classical scholars, and of which Scipio's 'Dream,' and the other fragments that remained, showed the immense importance. But what, for the renown of the Cardinal, was equal to the discovery, or rather recovery, of this magnificent work, was the skill with which he deciphered it—a task of exceeding difficulty, and one which, in other manuscripts of equal antiquity, had baffled the scientific means and appliances of Sir Humphry Davy.

A very interesting letter from Captain Penny has been published in the 'Liverpool Albion,' giving an account of his late Arctic expedition. Captain Penny left England on the 9th August, 1853, and reached Leitchenfels on the 9th September. Some very rough weather was encountered during that month, and the ship had a narrow escape, as appears from the following statement:—"Tacked towards the American shore; reached it on the 12th of September, in thick snow, and a cross sea, with rapid tide; got embayed; ship missed stays; but an overruling Providence lifted the pall of fog; an iceberg was observed in a bight. To run for it was my only chance—a poor one, indeed, with such a sea; however, it proved to be two islands, about 1500 feet high. Just as we were passing out between two icebergs, the wind came round the end of the island, right ahead, and backed the ship round, and her stern came to within a few feet of the berg, when a light breeze again came, and carried her a hundred yards from it. The wind again backed her round. We passed between the island and berg, about six feet from the latter; had she struck, she would have gone down. This was about the mouth of Frobisher's Strait. Brought up in Newacktoolick Harbour on the 16th of September. While preparing my boats for fishing I shifted to Hemsooke Harbour. On the 4th November the expedition brought up in winter quarters, having taken ten whales during the fishing season. In December, cholera broke out, and carried off a third of the Esquimaux who formed the little colony at Newacktoolick harbour. The boiling down of the whales was finished on the last day of March. The winter was one of unusual severity, the ice reaching twenty-one miles from the land. The letter thus concludes:—"On the 18th of April sent down the boat sixteen miles over the ice. My first trip to the water with my dog-sledge was on the 25th March, twenty-five miles. The bay ice would not bear the boats to the water until the 1st of May. Pitched three tents at the water's edge, where eighteen men managed to kill eighteen whales, and to drag up to the ship seventeen (lost one). I had sometimes as many as twenty-two sledges on the ice! The distance, in a straight line, was twenty-one miles, or about twenty-two miles and a half with traverse course. The dogs went to the water's edge and back every day, making a daily journey of forty-five miles; the distance, put upon end, would have amounted to 14,000 miles. A heavy gale having come up the gulf, broke up the ice; the three boats were put upon sledges, and, with one sail set upon the first boat, she dragged all the rest. Now, bear in mind this was not less than two tons and a half dragged by one sail. Now for the profits of my voyage. The *Lady Franklin* 12,000*l.*, and I have no doubt the *Sophia* will return with some 8000*l.* I intend to proceed out immediately. . . . I still feel assured that an Arctic Ocean does exist, and a milder climate as we approach it."

The eighth annual meeting of the Cambrian Archæological Association was last week held at Ruthin. Papers were read, chiefly on subjects of local antiquities, and excursions were undertaken to visit the most interesting objects and scenes in the neighbourhood, including Ruthin Castle, Pool Park, Efenechtyi, and other places. The meeting was attended by a large number of antiquaries both from North and South Wales.

It is not uncommon in Paris to hear it alleged that criticisms in the public journals are very frequently venal. But, for the credit of the press, every reflecting person has always been disposed to treat assertions of this kind as calumnies. Within the last few days, we hear that immense sensation has been caused in the journalistic and theatrical circles, by the husband of an eminent operatic singer having laid a formal complaint to the editor of one of the principal daily newspapers, that his musical critic—who is also the critic of another great daily journal—had for some time attacked or neglected to speak of the lady because she had intimated that she could no longer continue to pay him 80*l.* or 100*l.* a year to sing her praises. An investigation was immediately made, and the result was, that the complaint was found to have risen out of some strange misunderstanding. Accordingly, the critic in question retains his situation on both newspapers. This incident must no doubt be accepted as a proof that Parisian critics do *not* take bribes.

Mr. Philip Barker Webb, the eminent botanist, whose decease at his residence in Paris we recorded a fortnight since, has left his fine herbarium by will to his "dear friend the Grand Duke of Tuscany." The herbarium being especially rich in the plants of Spain and Portugal, will, no doubt, form a very acceptable addition to the Grand Duke's botanical collection, who is well known as an intelligent patron of natural history, and more especially botany.

In addition to the death from cholera of Dr. Landsborough, we have also to record the sudden death, on Saturday last, of another Associate of the Linnean Society, Mr. Abel Ingpen, an entomologist and microscopist of some repute.

A telescopic comet was discovered at the Observatory at Berlin on the 12th, by M. Bruhns, but no details respecting it have yet been given.

The statue of the late Duke of Wellington, by Adams of Chelsea, has arrived in Norwich; but the site not being yet determined upon by the subscribers, it has not been yet exposed in any way to public view.

The receipts of the Norwich Musical Festival are about 4150*l.* The expenses exceed 4000*l.*, but there will probably be a small surplus.

A school of art has just been established at Great Yarmouth.

The re-appearance of Mr. Morris Barnett as *Monsieur Jacques*, at the opening of the Adelphi on Monday evening, and the engagement of Mr. Hudson, the Irish comedian, at the Haymarket, are the chief theatrical events to note during the week. It is many years now since Mr. Barnett surprised the town by his representation of this well-marked and admirably-expressed character. The blending of the pathetic and the comic in the history and position of the poor old Frenchman is an unusual combination, and in the expression of it the actor shows great skill and feeling. We do not know of Mr. Barnett's name being associated with any other character, and thus on the stage he enjoys a reputation similar to that of "single-speech Hamilton" in the senate. We advise all who wish to witness a genuine piece of highly-artistic acting,—the finished art which appears like nature,—such as is rarely excelled on the stage, to take the opportunity of seeing Mr. Barnett as *Jacques* at the Adelphi. The company in general is much the same as before the recess, and the *pièce de resistance* of the entertainment this week is *The Discarded Son*, which has already had a run of popular favour.

At the Haymarket, Mr. Hudson, on his return from an American tour, has appeared during the week in some of his well-known Hibernian characters, among which the best of the whole is *Sir Patrick O'Plenipo*, in the *Irish Ambassador*, though in other parts there are passages of humorous drollery.

At Sadler's Wells, *Shylock* has been performed this week. We are glad to hear that the benefit for Mrs. Warner last Friday was most satisfactory in its pecuniary results, as it was most gratifying as an exhibition of kindly professional feeling, and an occasion of the display of high histrionic art.

FOREIGN CORRESPONDENCE.

Göttingen, Sept. 18, 1854.

THE thirty-first meeting of the Society of German Naturalists and Physicians commenced here this morning, under the Presidency of Professor Baum. It is a somewhat remarkable circumstance that Göttingen should not have been already selected as the place of meeting; but the fact is, that, notwithstanding the many and incontestable claims which the University, where Natural History may be said to have first struck root in Germany under the auspices of Blumenbach, could put forth for such a distinction, the Society has this year met for the first time in the kingdom of Hanover. The causes of this apparent neglect are various, and I will endeavour, in the course of my report, to explain some of them. It may be enough for the present to say, that the principal cause will probably be found in the conduct of the Georgia Augusta itself. Another more remarkable fact is, perhaps, that Göttingen is now almost the only place of note in Germany where railway communication is still incomplete. The railroad to Hanover is already open, but the more important line to Cassel, by which the direct communication with the south and south-east of Germany will be established, is still far from completed. The difficulties of the ground, the enormous cuttings through the Muschelkalk, on ascending the hills south of Göttingen, the embankments and bridges over the Werra, near Münden, are the chief causes of this delay, and it is not expected that the line will be completed and opened before the end of 1855.

In consequence of this interruption in the series of iron chains which are fast encircling the body of European states, and which will be the best pledge of universal peace, we were compelled at Cassel to have recourse to the now almost forgotten and antiquated post-waggon, in which, under a tropical sun, and in a suffocating dust and a six-inside pressure, we were conveyed at the rate of something less than five miles an hour to this seat of learning. Our reception was not auspicious. A violent thunderstorm burst upon us before we were fairly housed, the first rain which had fallen for four weeks. The reception rooms were closed, notwithstanding the notices given to the contrary. Of course we were told that the gentlemen were only *that instant* gone, and would be back directly. We thought it strange that they should have deserted their post at the moment when the mail-post was expected, and innocently waited their return until our patience was exhausted.

The few small inns which the little town can boast of were already full, and we were obliged to content ourselves with vacant students' rooms. Such quarters are neat and clean, but are not supplied with a superfluity of furniture. I was somewhat staggered on being ushered into my bed-room last night, notwithstanding my former experience of a Göttingen student's quarters, at finding the furniture to consist, literally, of a bed and a table; the latter perfectly bare, while the bed groaned under a featherbed which would have smothered an hippopotamus, and under which I was expected to find repose and rest. But these are trifles, and rather give a zest to the spiritual and scientific enjoyments expected on these occasions—"à la guerre comme à la guerre." So we betook ourselves to the great room of mine host of the Crown, set apart for the social and material recreations of the philosophers. Here the scene soon became interesting. As the evening advanced, fresh arrivals of distinguished men from all parts of Germany poured in, old acquaintances greeted each other, new ones were proud of the opportunity of becoming acquainted, and many were the huggings and kissings between bearded and unbearded veterans of science. As a foreigner, I was at first in a great measure a spectator, but I soon found myself in a circle of geologists whose names have acquired a European reputation. Amongst them I may mention Professor Noeggerath, of Bonn; Sartorius von Walthershausen, of Göttingen; Merian, of Basle; Von Karnall, of Berlin; Von Strombeck, of Brunswick; Menke, of Pyrmont, author and editor of the 'Malacozoological Journal.' To-day has greatly added to the list of notabilities; but it must be remembered that by far the greater number of the members of this Society belong to the medical profession. But I have already dwelt too long on this introductory digression.

The first general meeting took place at 10 A.M., in the aula or hall of the University House, Professor Baum, President. On opening the first general sitting of the thirty-first meeting of German Naturalists and Physicians, the learned Professor alluded somewhat unnecessarily to the causes which had led them to anticipate that the meeting would not have taken place at all. These were, 1st, the fear of a general war in the early part of the year; and 2dly, the cholera, which was prevailing in the south of Germany. He alluded to the circumstance of its being the first time the Society had met in the kingdom of Hanover, and the honour paid to the university by its present selection. He endeavoured to explain the reasons why Göttingen had appeared not to have taken much interest hitherto in the affairs of the Society, which he attributed in a great measure to the state and progress of medical science. On the one hand, he expatiated on the independent position and self-government of the university; on the other, he extolled the wonderful progress which medical science had made in Germany during the last twenty years. From these causes had arisen a kind of schism, inasmuch as the Göttingen professors had been slow to adopt those new views which younger members of the profession in other places had, as they thought, rashly advocated. They feared that the spiritual would be forgotten in the material. At length they saw that this danger did not exist; that although a wrong direction might occasionally be taken, the sincere love of truth must ultimately prevail; and he admitted that the study of the material laws by which the functions of the human body are regulated must first be studied and understood before we can attempt to direct our attention to the study and knowledge of what is immaterial and spiritual. After a few remarks in praise of scientific pursuits, the President concluded his address with the remark, that the ultimate end of all science was the spiritual development of mankind.

The Vice-President, Prof. Listing, then proceeded to read the statutes of the Society, and announced the names of the Provisional Sectional Presidents:—

1. Physics, Mathematics, and Astronomy—*President*, Prof. W. Weber.
2. Chemistry and Pharmacy—*President*, Prof. Wöhler.
3. Mineralogy, Geognosy, and Geography—*President*, Prof. Sartorius von Walthershausen.
4. Botany, Agriculture, and Forestry—*President*, Prof. Bartling.
5. Anatomy, Physiology, and Zoology—*President*, Prof. Berthold.
6. Medicine, Surgery, and Midwifery—*President*, Prof. von Siebold.
7. Anthropology and Psychology—*President*, Prof. Lotze.

Prof. Wagner (Hofrath) of Göttingen then read, according to usual practice, a scientific address. The subject he had chosen was 'On certain Portions and Modes of Considerations of Anthropology.' A better title, he observed, would perhaps have been, 'On the Creation of Man and the Substance of the Soul.' The main objects of his address were, 1st, the praise of Blumenbach; and 2nd, a polemical attack on the anthropological views of a modern author whom he did not name, but who is supposed to be Carl Vogt, whose doctrines he denounced as immoral and derogatory of human nature. After explaining Blumenbach's doctrine of the five races which showed no greater differences than the local and geographical varieties of the same species in many of our domestic animals, and which had been confirmed by modern science, he stated that these views were still further strengthened by the result of recent linguistic investigations. Then comes the question—are all men of one race, and are all descended from one pair? Notwithstanding partial assertions to the contrary, the result of his scientific investigations had convinced him that no argument could be drawn from the study of the natural history part of the question against the existence of only one species; and, moreover, although it was difficult to adduce any direct proof for or against the descent from one single pair, he was equally convinced that there was no argument against such a view. He then proceeded to discuss the other portion of his thema, and to consider whether modern science, either as natural history or physiology, had made any progress respecting the future life, or with regard to the state and nature of the soul. Materialism in this respect had made great progress in latter times; and he vehemently attacked the views of a modern author, who, amongst other things, asserted that to assume a spiritual soul dwelling in the brain, and thence directing the motions and actions of the body, was the greatest absurdity, and who had also denied the truth of such a thing as individual immortality. Were the views of this author, who also denied the existence of free will, founded in truth, or even recognised as such, where would be the use of all the exertions of those great and good and learned men who for centuries have laboured and worked for the improvement and instruction of the human race? There would be nothing great or noble in man's nature, there would be no reality in history, no truth in faith. Where would be the result of all our scientific investigations? He concluded by observing, that however difficult or even impossible it might be to explain the nature of the soul, we must be satisfied that the answer could not be one which was opposed to all morality and all virtue.

Dr. Göschen of Berlin then read an address 'On the object, meaning, and use of the General Meetings.' The object of the address, which was pedantic and full of truisms, was not very apparent. One point, however, which the learned author dwelt largely on, was the importance of the general sittings as compared with the sectional. For this purpose he wished to see the public sittings, which he considered as the main object and aim of the original founders of the Society, greatly improved and extended, only such papers read as were of general interest, and those subjects avoided which could offend the delicacy or modesty of any of the hearers.* He endeavoured to enliven his subject by trite quotations from 'Faust,' told a pointless story about an Englishman reading 'Faust' with a dictionary, and after apologizing for "der langen Rede kurzer Sinn,' concluded by observing that theo bject of science should be, not to work for praise, but for the good of man.

Dr. Gümpel of Landau next read an address 'On the Cells, with reference to the origin and first causes of the Grape and Potatoe Diseases.' The author considered it his duty to lay before the meeting the result of his careful investigation respecting the cause of these diseases. After tracing the progressive steps of scientific discovery, three of which he specially alluded to—viz., the researches of Aristotle, the discovery of painting, and the invention of the microscope, he attributed to the latter our knowledge of the cells and cellular structure of plants. The great element in the development of vegetable life is the pollen (Blüthenstaub). The pollen is the great cause of the disease or death of plants; the sound or unsound condition of the pollen influences the whole growth of the plant. The pollen is carried in every direction by the winds, it attaches itself to the leaves or it falls on the ground. There it bursts, and again distributes its mischievous effects, if unsound, on all around. Thence the difference in the time when the disease shows itself on the grape or the potatoe, as it can only appear after the flowering, on which depends the healthy or unhealthy state of the plants. He did not explain how the pollen first became diseased, but he thought it might be first developed in the bud. At all events, he con-

* It was generally felt that it would have been well if this rule had been observed in the public general sittings at Wiesbaden in 1852.

cluded, we have now an open, well-known enemy to deal with, and need not fear the existence of a mysterious, unseen, unknown foe in the air.

Professor Lichtenstein of Berlin requested leave to reply to some of the observations of Dr. Göschen respecting the public or general meetings. He considered the sectional meetings as of the greatest importance, and stated that the reason why sectional meetings were not alluded to in the statutes, or rather why only open meetings were mentioned, was to be found in the circumstances of the times when the Society was founded. When Oken and his brother naturalists first inaugurated the Society, they determined, in order to remove all suspicion that they were holding secret meetings on political subjects, that the meetings should be open or public. It was not until the Society had existed for seven years, that the sectional meetings were introduced, and chiefly through the instrumentality of the late lamented Von Buch.

The Vice-President then called upon the Members to form their different sections, and requested the respective Provisional Presidents to assemble their Sections in the rooms appointed for their use

The General Meeting was adjourned.

The Sections accordingly met in their respective rooms, appointed permanent or daily Presidents, received the titles of papers to be read to-morrow, and generally fixed the hour of meeting for 8 o'clock A.M. The meeting does not seem to be so full or so well attended as at Wiesbaden.

VARIETIES.

The use of Fish for Agricultural Manure.—M. Payen, the eminent French chemist, has just called the attention of the Central Agricultural Society of France to the fact, that fish form an excellent manure, and that several million tons, which at present are cast into the sea, or totally neglected, might be used for that purpose. In the fishing of cod alone, he declares that 7,000,000 tons a year might be obtained at a cheap rate, and turned into at least 150,000 tons of most fertilising manure. And he tells French farmers, that in the state of Connecticut in the United States, it is the usage to employ immense quantities of "white fish" in manuring lands. Perhaps the suggestion of M. Payen is well worthy of consideration from English *savans* and agriculturists. In Scotland, during some herring seasons, the supply has been so superabundant as to admit of being thus used.

The Royal Scottish House of Bruce.—Mr. Gabriel Surenne has returned from an archæological visit to Holm Outram in Cumberland, and Hartlepool in Durham, in the abbeys of which the remains of Barons Bruce the 5th and 8th are buried. By this visit the learned traveller appears to have succeeded in completing the historical chain of the nine Barons composing the royal Scottish house of the Bruces; the identity of whom is fully established, we are told, by a great number of charters and other public documents to which their names are attached. The persevering labours of Mr. Surenne concerning the above Barons are likely, when published, to prove an interesting illustration of the annals of Scotland.—*Edinburgh Witness.*

London: Printed for Lovell Reeve, of 5, Henrietta Street, Covent Garden, in the County of Middlesex (at the Office of Messrs. Savill and Edwards, No. 4, Chandos Street, Covent Garden, aforesaid) and published by him at his Office, 5, Henrietta Street, Covent Garden.—Saturday, September 23, 1854.